

FIRST AERO WEEKLY IN THE WORLD

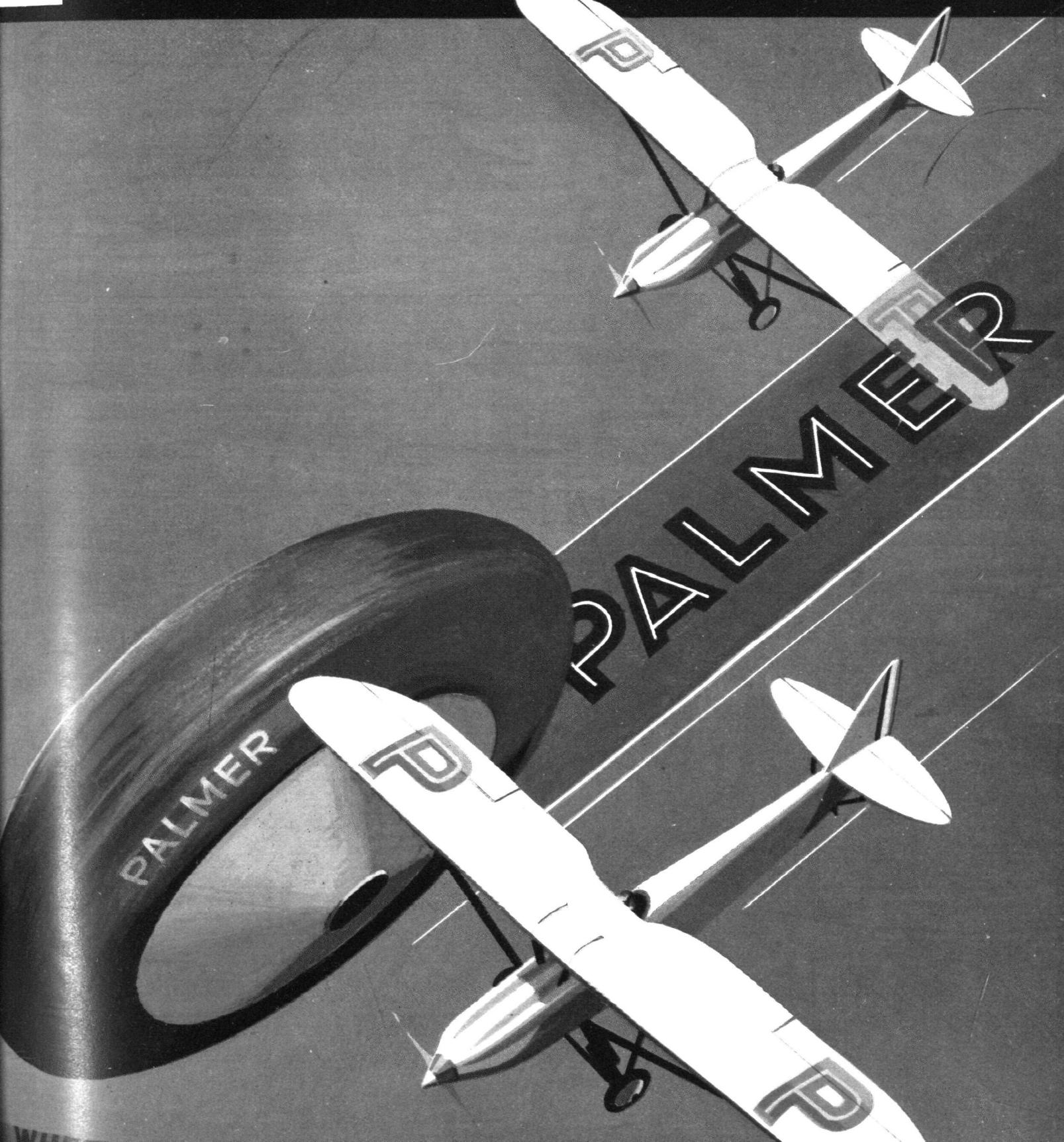
FLIGHT

The
AIRCRAFT ENGINEER
AND AIRSHIPS

OFFICIAL ORGAN OF THE ROYAL AERO CLUB

SIXPENCE
EVERY THURSDAY

No. 1286
Vol. XXV
No. 33





Reconnaissance
Fighting
Bombing
Photography
Ambulance

"Bristol"

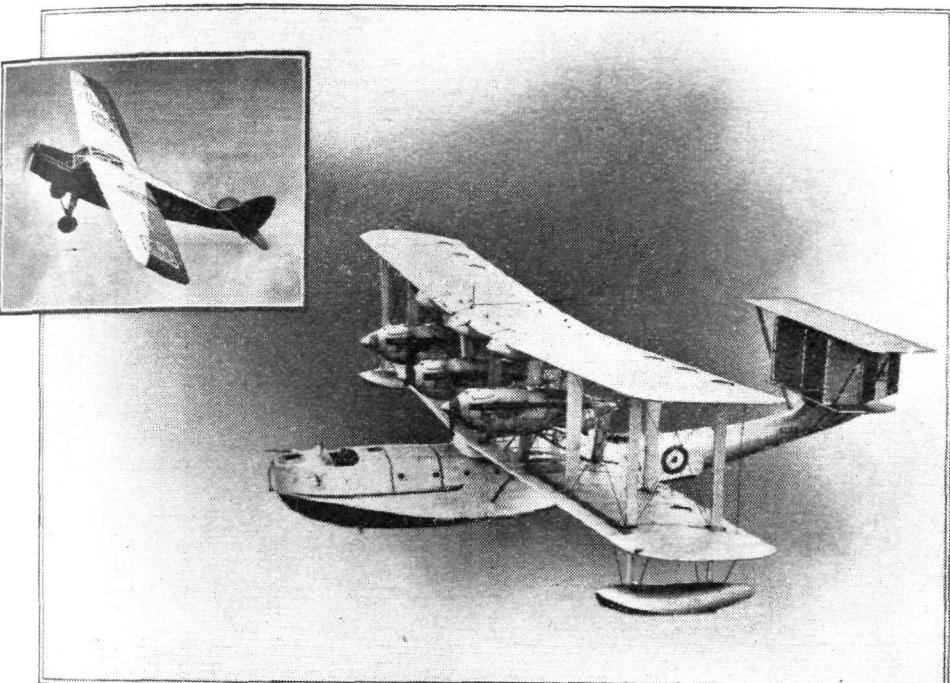
**GENERAL PURPOSES
AIRCRAFT TYPE 120**

*An aircraft of outstanding
performance and utility.*

THE BRISTOL AEROPLANE CO. LTD.,

FILTON, BRISTOL

Kindly mention "Flight" when corresponding with advertisers.



● The illustrations show :—

(1) On the De Havilland "Puss Moth," the engine cowling, seats, rudder and elevator tailing edges and window framework are of aluminium. For the Gipsy "Major" engine used in this machine, aluminium alloys were chosen for the main crankcase, pistons, connecting rods, various small die-castings, tappet guides, etc.; aluminium bronze was employed for the cylinder heads; Duralumin for the Fairey-Reid airscrew.

(2) Blackburn "Iris V" flying boat ; fitted with Rolls-Royce "Buzzard" engine; the machine construction is almost entirely of Duralumin, including the hull and floats.

FL.17.8.33.

FROM SINGLE-SEATER TO FLYING BOAT . . .

WHETHER for fast individual travel or for the more exacting requirements of heavy transport, the problem remains the same, namely, to obtain maximum ratio of power to total weight of machine. Hence the extensive use of aluminium and light aluminium alloys, at one end of the scale to get speed and at the other to obtain additional payload or a wider radius of action.

You are invited to ask
for Book No. 327.

**ALUMINIUM
AND
LIGHT ALLOYS**
THE BRITISH ALUMINIUM CO. LTD.,
ADELAIDE HOUSE, KING WILLIAM STREET, LONDON, E.C. 4.
TELEPHONE: MANSION HOUSE 5561 & 8074 (5 LINES) TELEGRAMS: CRYOLITE, BILGATE, LONDON.

HABERSHON

STRIP &
SHEET STEEL

Free from defects,
sound and homogeneous, supplied
in coils or lengths,
in hardened and tempered or in
softened condition
—in all respects to
meet purchaser's
requirements.

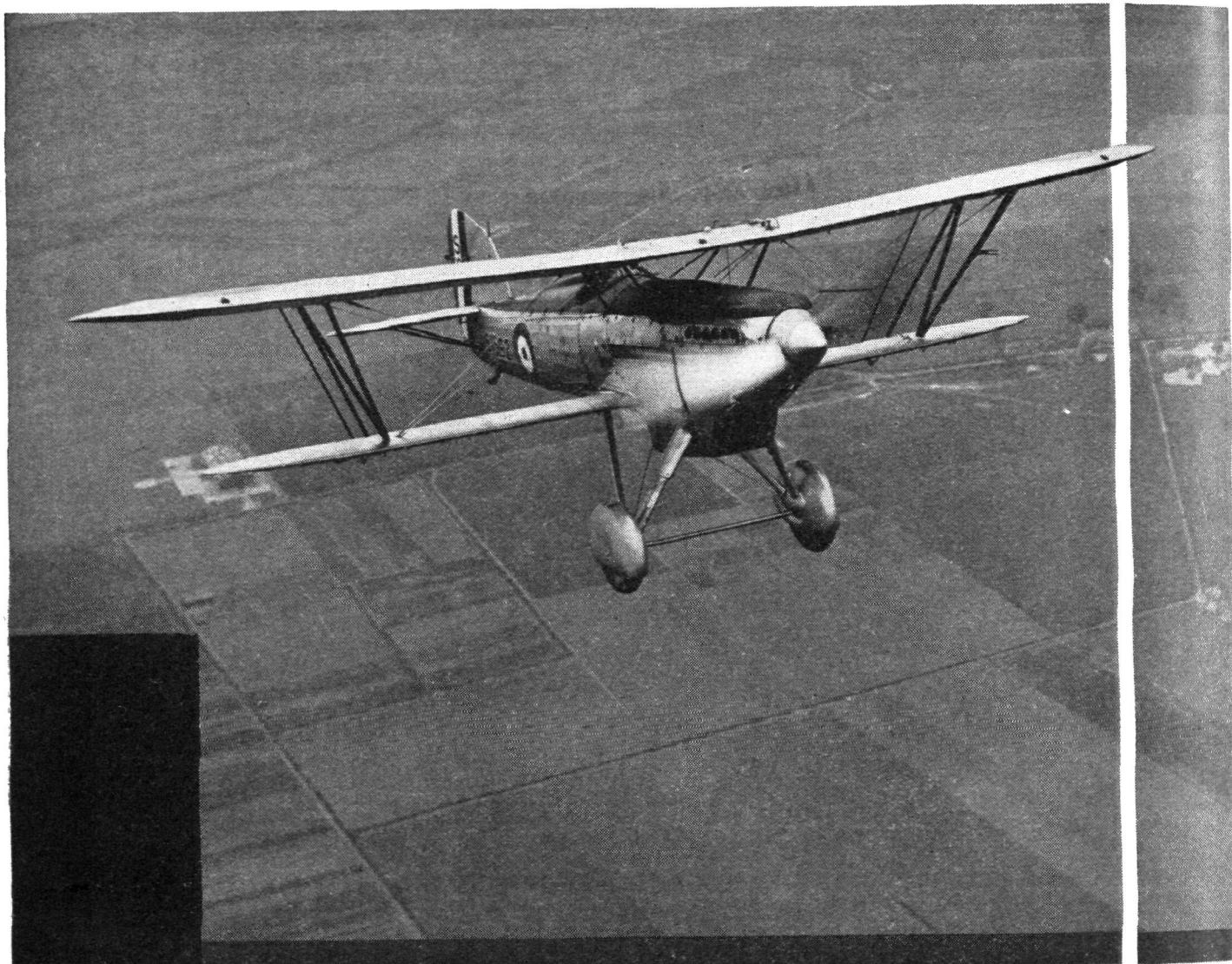


J. J. HABERSHON & SONS LTD
HOLMES MILLS — ROTHERHAM.

Save time by using the Air Mail

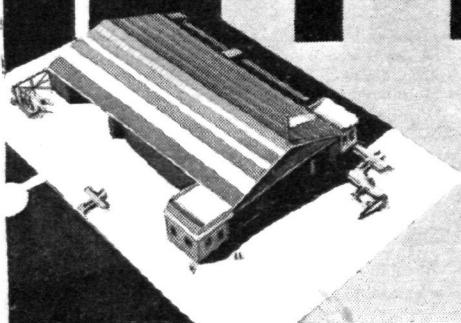
Single Cards 6d. each, post free.
Six or more Cards 4d. each, post free. } Cash with order.

"FLIGHT" Office,
36, Great Queen St., Kingsway, W.C.2
Telephones: Holborn 3211 & 1884.



THE FAIREY "FIREFLY" MK.II. . . . the premier single seater fighter in the world to-day, unsurpassed in performance and equally remarkable for its extreme and ready manœuvrability. This type of aircraft has been chosen for Belgian Air Force equipment after exhaustive trials and in the face of the strongest competition. As an indication of their satisfactory behaviour under Service conditions there have been placed recent further contracts.

F A I R E Y



FLIGHT

The
AIRCRAFT ENGINEER
AND AIRSHIPS

First Aeronautical Weekly in the World. Founded January, 1909

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice and Progress of Aerial Locomotion and Transport

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 1286. (Vol. XXV.) 25th Year.

AUGUST 17, 1933

Weekly, Price 6d.
Post Free, 7½d. Abroad, 8d.

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C.2.

Telephone: (2 lines), Holborn 3211 and 1884.

Telegrams: Truditur, Westcent, London.

Subscription Rates, Post Free.		
UNITED KINGDOM	UNITED STATES	OTHER COUNTRIES
3 Months ..	\$ 2.20	3 Months ..
6 " ..	\$ 4.40	6 " ..
12 " ..	\$ 8.75	12 " ..
		35 0

CONTENTS

Editorial Comment:	PAGE
Air-Marshall Balbo and his Squadrons	817
Foreign Air Forces	818
Italian Flying Boats Return	819
Racing and Joy-Riding at Newcastle	821
A Novel Air Drive System for Tenders	824
From the Clubs	825
No. 3 Flying Training School, Grantham	827
Air Transport	833
Airport News	834
Airismus from the Four Winds	835
Coproni "Sauro-1"	836
Book Reviews	837
Ports of Call	838
Royal Air Force	839

DIARY OF CURRENT AND FORTHCOMING EVENTS

Civil Secretaries and others desirous of announcing the dates of important meetings are invited to send particulars for inclusion in this list:—

1933.	Aug. 18-22. Swimming : R.A.F. Championships, Halton.
	Aug. 19-20. 5th Annual Canadian Air Pageant, St. Hubert Airport, Montreal.
	Aug. 19-20. Rallye Aerien a l'Aero-Club de Vichy.
	Aug. 26. Folkestone Aero Trophy Race.
	Aug. 28-30. Golf : R.A.F. Autumn Meeting, Camberley Heath G.C.
	Aug. 29-31. Swimming : Inter-Service Championships, Aldershot.
	Aug. 31-Sept. 9. Model Engineer Exhibition, R.I. Horticultural Hall, Westminster.
	Sept. 1-4. International Air Races and Gordon Bennett Balloon Race, Chicago.
	Sept. 2. Norfolk and Norwich Ae.C. Garden Party.
	Sept. 2-4. Austrian Ae.C. International Air Rally, Gastein, Austrian Alps.
	Sept. 6. Thames Valley Ae.C. Garden Party and Display at Hook Aerodrome, Kingston By-Pass.
	Sept. 9. Kent Air Pageant, Maidstone Airport.
	Sept. 9. Essex Aviation Display, Maylands Aerodrome, Romford.
	Sept. 16. Bristol and Wessex Ae.C. Garden Party.
	Sept. 17-24. "la Bienvenue Aerienne" at Rheims.
	Sept. 29. Stage and Screen Ae.C. Gymkhana and Theatrical Garden Party, Hatfield.
	Oct. 7-8. B.G.A. Gliding and Soaring Competition.
	Dec. 18-24. International Rally at Cairo and Meeting of the F.A.I.
1934.	June 1. Entries close at 12 noon for London-Melbourne Race.
July 3-9. 4th International Congress for Applied Mechanics, Cambridge.	

EDITORIAL COMMENT



T last the great Italian formation of flying boats is back at Rome and the crews have been accorded a "Triumph" on the lines of those awarded to Caesar and Pompeius Magnus when they returned from foreign conquests. Both the King of Italy and Signor Mussolini welcomed the gallant crews, who have certainly shown the red, white and green tricolour most impressively in two continents. Two lives have been lost and two boats damaged, perhaps beyond repair. Before the flight started a rumour went round that General Balbo, as he then was, was prepared to lose 25 per cent. of his flying boat wing. So hazardous was the journey that this did not sound too extravagant an estimate of casualties, but, if such a forecast was really made, the actual losses in aircraft are but one-third of it. When we consider the cost paid in lives each week-end for pleasure on the roads and in the sea, we cannot call the losses to the Italian formation excessive.

The flight has been a great demonstration of the efficiency of the Italian Royal Air Force in equipment, in training, in skill, and in hardihood. No other nation could have put into the air 25 flying boats which could have covered such distances. Sir Philip Sassoon admitted in the House of Commons that our Royal Air Force had no flying boat in commission with such a range, when carrying full service load. He added that he was not prepared to say that he was satisfied with the present position. We know, however, that the Air Ministry is actively promoting advance in the matter of flying boats, though the progress has not been so fast of late as we should have liked it to be. We are all waiting with interest to see what the six-engined Short boat will accomplish when she starts her demonstration flights. Still, we must recognise the position that now we have not got any boats which can fly 1,500 miles non-stop with full service load, while Italy has at least 24 boats which can do so. Consequently all the world must admire, as we do, the high

position won by the Italian Royal Air Force under the inspiring leadership of Air-Marshal Balbo.

Of course the cost of the flight has been high. A correspondent of one leading paper put it as high as two million pounds, to which he added another half-million or so spent by other nations in entertaining the Italian crews. The long delays waiting for fine weather added not a little to the last item. We cannot blame Marshal Balbo for taking no more than the unavoidable minimum of risks, for that minimum was in any case great enough, but the history of his flight showed that aeroplanes are not yet masters of the Atlantic, and must wait on the humours of that great ocean. The chances of a commercial service by air between the continents of Europe and America are as remote as they were before Balbo started. In fact, their remoteness is probably more widely recognised now than it was a couple of months ago.

We may recall, without tears, that not many years ago our Royal Air Force sent out a small formation of four "Southampton" flying boats, which made their way from Plymouth to Australia, all round that continent, and back to Singapore. The outstanding feature of that flight was that there were no accidents and that the machines always flew by schedule and always arrived punctually to time. They could not have crossed the Atlantic, but they were complete masters of the route on which they were sent, and it was a route of great importance to the British Empire. In those days we led the world in flying boat design, and we feel quite confident that in time we shall regain that position. In the meantime we offer our hearty congratulations to our Italian friends on holding the lead for the time being. Balbo and his men are the finest of fine fellows. But we warn them, in all friendliness, that we do not mean to let them keep that particular lead for very long.



Drastic reorganisation of the flying corps of France and Spain is now taking place, and in each scheme can be discerned the germ of a separate Air Force on the model of the Royal Air Forces of Great Britain and Italy. At the same time

Foreign Air Forces Germany has just instituted an Air Ministry, with Capt. Goring as Air Minister.

The French reorganisation appears likely to be very wide in character. The Army Flying Corps and the Naval Flying Corps are treated separately in the scheme. In France the Army is the more important Service of the two, and the military Flying Corps is likewise very much larger than the naval Flying Corps. The reorganisation of the former, though it is to be extensive, is planned to proceed on straightforward lines, with nothing revolutionary in principle about it. Briefly, France is to be divided into four air regions, with headquarters at Metz, Paris, Tours, and Lyons. There seems to be nothing corresponding to our Fighting Area, which is not territorial in character.

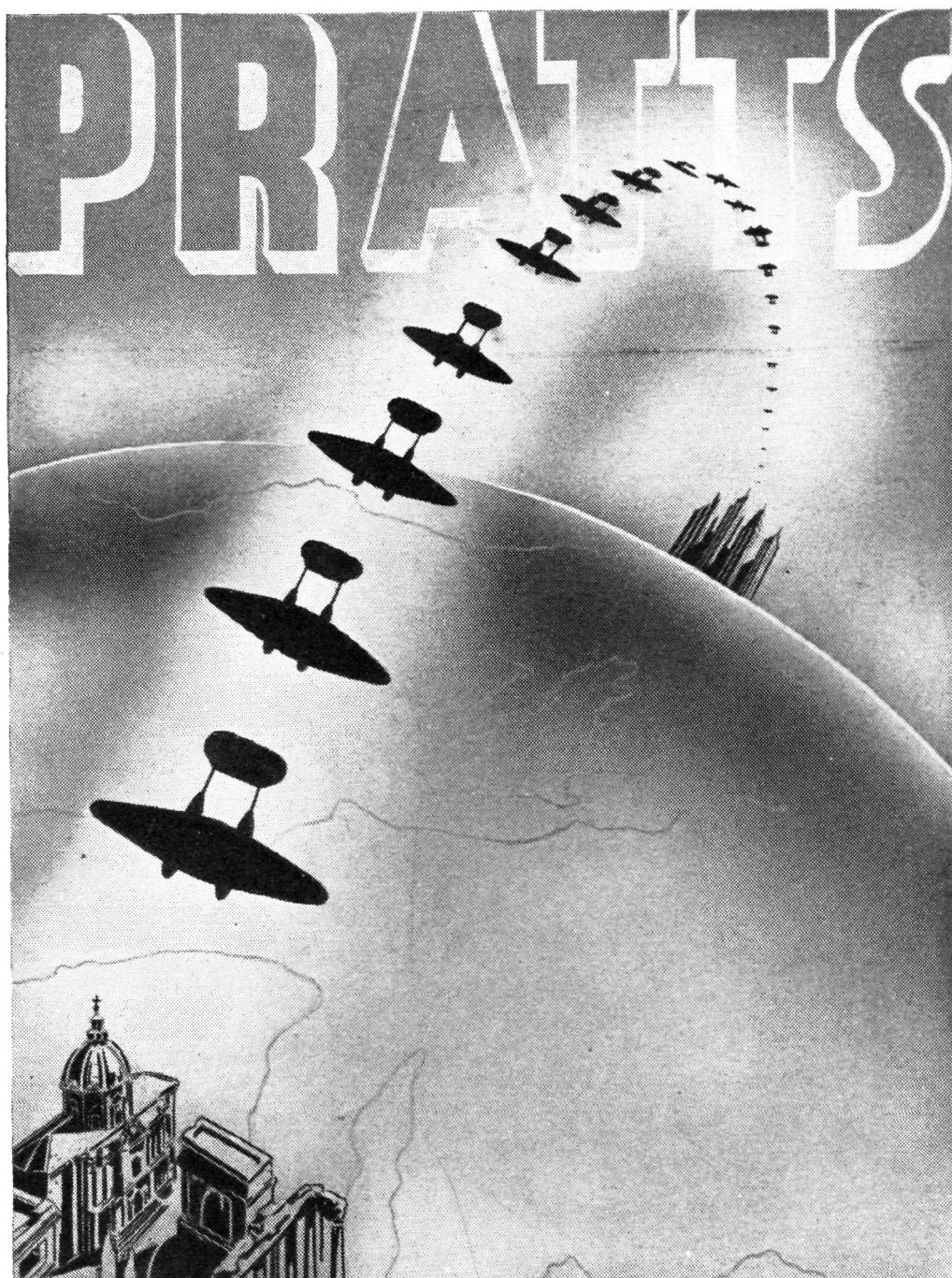
It is in the reorganisation of the Naval Flying Corps that a revolutionary novelty is being introduced. This corps is being divided into three branches, namely the Fleet Air Arm, the Naval Co-operation units not afloat, and the Autonomous Naval Air Force. The first two branches are purely naval, and the Air Minister is responsible only for

such matters as *ab initio* flying training, equipment, and the maintenance of shore bases, though even this duty is carried out by naval officers who form a special directorate at the Air Ministry. The Fleet Air Arm consists of all the aircraft which are carried on ships and a few training aircraft on shore. The second branch, Naval Co-operation units not afloat, includes all naval reconnaissance units based on the shore and a proportion of the torpedo bomber units. But, and this is significant, the Autonomous Naval Air Force is directly under the Air Minister. It is composed of all shore-based fighter units and the remainder of the torpedo bomber units. The personnel of this Force are at present seconded from the Navy, but the intention is to replace them eventually by Air Force personnel.

This last provision seems to foreshadow the formation of a new separate French Air Force. At present there is no such service, and if a pilot is not a soldier then he must be a sailor. We wonder what the French Admiralty will think about this decision to introduce a separate element into the French Navy. We know that such an arrangement is far from popular in our own Navy, and Admiralty resentment on the subject has caused no small amount of trouble. The French Navy is not, like ours, the senior Service, though the Minister of Marine has just boasted that, apart from the battleships, the French warships are equal to, if not superior to, the ships of the United States, Great Britain, and Japan. The French Admiralty may not be able to make a very effective protest against this apparent invasion of a new Service into naval organisation. The French Army is much stronger, and for the present at any rate the air defence of France is likely to remain a branch of Army work. Unless this introduction of "Air Force personnel" into the sphere of naval defence is intended as a thin end of the wedge which will ultimately bring all flying units into a French Air Force on the British model, we cannot understand what advantage it is meant to confer on the fighting strength of France.

To turn to Spain, we find that a Directorate General of Aviation has been established, and that an entirely separate Air Force is contemplated. It is to consist of (1) an Independent Air Force of bombers, (2) a Defence branch, presumably of fighters, which are to work in conjunction with the anti-aircraft units of the Army, (3) an Army Co-operation branch, and (4) a Naval Co-operation branch. This seems to be a fairly close copy of the British model, and we must congratulate the Spanish Republic on its ability to recognise and copy a good example.

It seems, however, that the Spaniards are copying the weak points as well as the strong points of our system. Apparently the ground anti-aircraft defence units of the Army are not yet in existence, but are to be created simultaneously and in conjunction with the Defence branch of the Air Force. Here we get divided control, which is a fruitful source of trouble. If, as appears to be the case, the Spanish slate is clean at the present moment, surely it would be much wiser for the anti-aircraft units to be founded as a branch of the Air Force rather than as a branch of the Army. Such units are a branch of air defence, and air defence can only reach its highest pitch of efficiency if all its elements are under one control and are paid for out of a single purse.



**GENERAL BALBO
CABLES:**

"Our 48 engines did not miss a single explosion throughout these flights . . . The quality and service rendered by the Oil Company were of the highest."

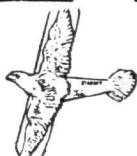
(Signed) BALBO.

AIR ARMADA BACK FROM CHICAGO!

Greatest Reliability Test in
History of Aviation accomplished on

STANAVO

AVIATION



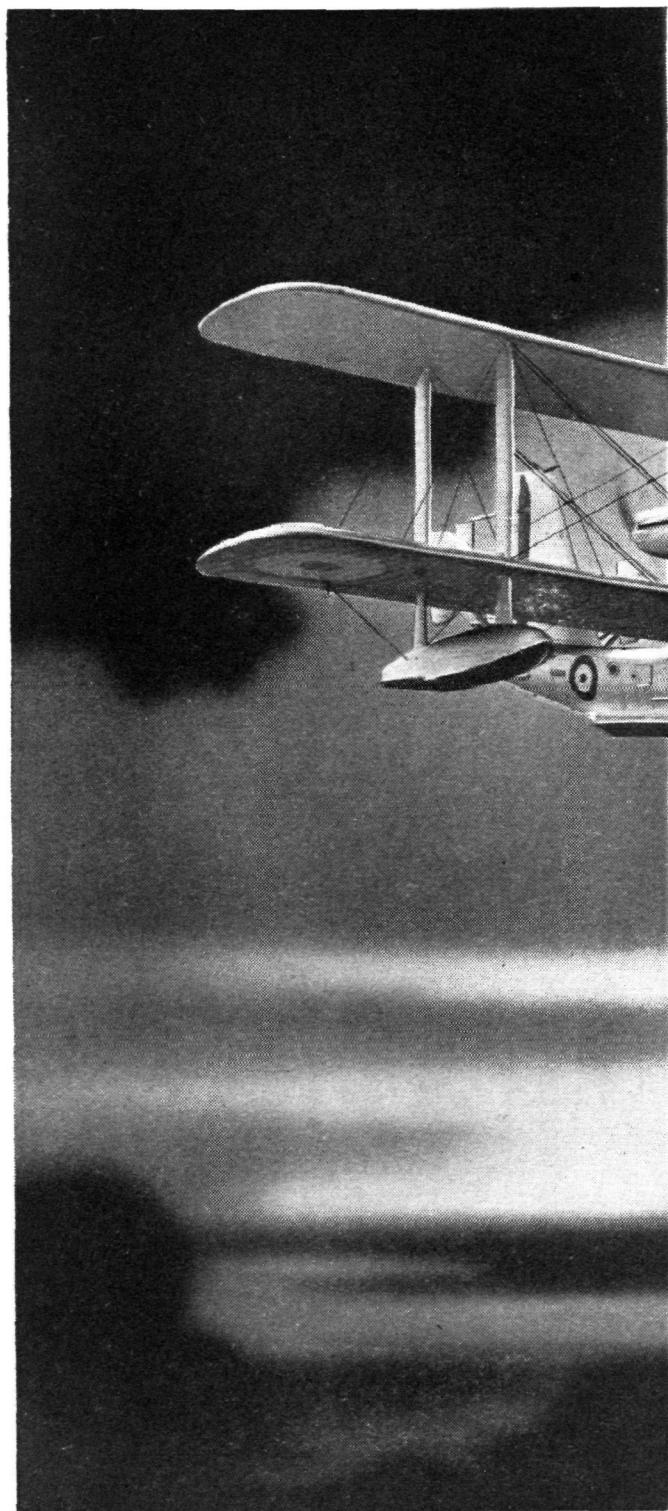
FUEL

SUPPLIED BY THE PROPRIETORS OF PRATTS

THE proprietors of Pratts take particular pride in announcing that General Balbo, the Commander of the Italian Air Armada, came to them for the petrol requirements of his fleet, knowing that absolute reliance may unfailingly be placed in the Company's products.

Motorists equally have the fullest assurance that the same scrupulous care is devoted to the production of Pratts Ethyl, Pratts High Test and the new Essolube hydrogenated motor oil, as in the special fuels supplied for this epoch-marking flight, and for such experts as Sir Malcolm Campbell, Sir Charles Kingsford-Smith, Miss Earhart, Colonel Lindbergh, and countless others during the past forty years.

Save time by using the Air Mail.



ROLLS-ROYCE AERO ENGINES For SPEED and RELIABILITY

SHORT-ROLLS-ROYCE GIANT FLYING BOAT FITTED
WITH 6 ROLLS-ROYCE 'BUZZARD' ENGINES

ROLLS-ROYCE LTD., 14-15 CONDUIT STREET, LONDON, W.I.

Kindly mention "Flight" when corresponding with advertisers.

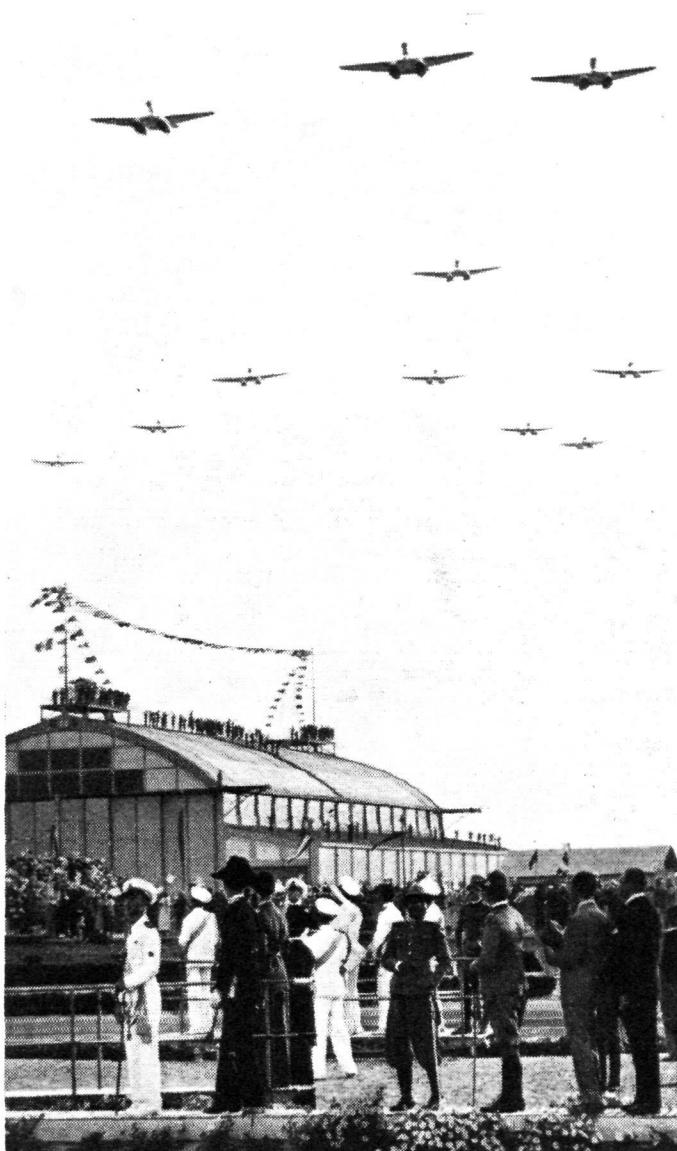
ITALIAN AIR TRIUMPH

THE progress of the Italian Savoia Marchetti flying boats has been reported in FLIGHT week by week since Saturday, July 1, when H.E. General Italo Balbo first left Orbetello on his ambitious double crossing of the Atlantic. Last week the arrival at Lisbon was reported; it was during the afternoon of Wednesday, August 9, that the 23 flying boats alighted on the River Tagus, having flown the 780 miles from the Azores. Twenty Portuguese machines met the Italians at the mouth of the river and escorted them to the moorings which had been prepared for them. On disembarking, General Balbo was received by the Italian Ambassador, the Portuguese Ministers of War and Marine and a number of diplomatic officials. The same evening General Carmona, President of the Republic, formally welcomed the Italians.

It had been the intention of General Balbo to call at Marseilles. In fact, preparations had actually been made there for his reception, even to the extent of voting £1,000 towards the expense of entertaining the airmen. Owing to the death of Lt. Squaglia, however, it was decided to fly from Lisbon to Rome non-stop. Before he left Lisbon, General Balbo decorated all his airmen with the Trans-Oceanic Aviators' Wings. On Saturday, August 12, the flight left Lisbon early in the morning on the last lap of their journey. In the meanwhile Rome had been preparing a tumultuous reception for the members of the flight. Fifty seaplanes were prepared to escort them home, thousands of people flocked down to the beach, and H.M. the King of Italy himself hastened back to Rome from the mountains.

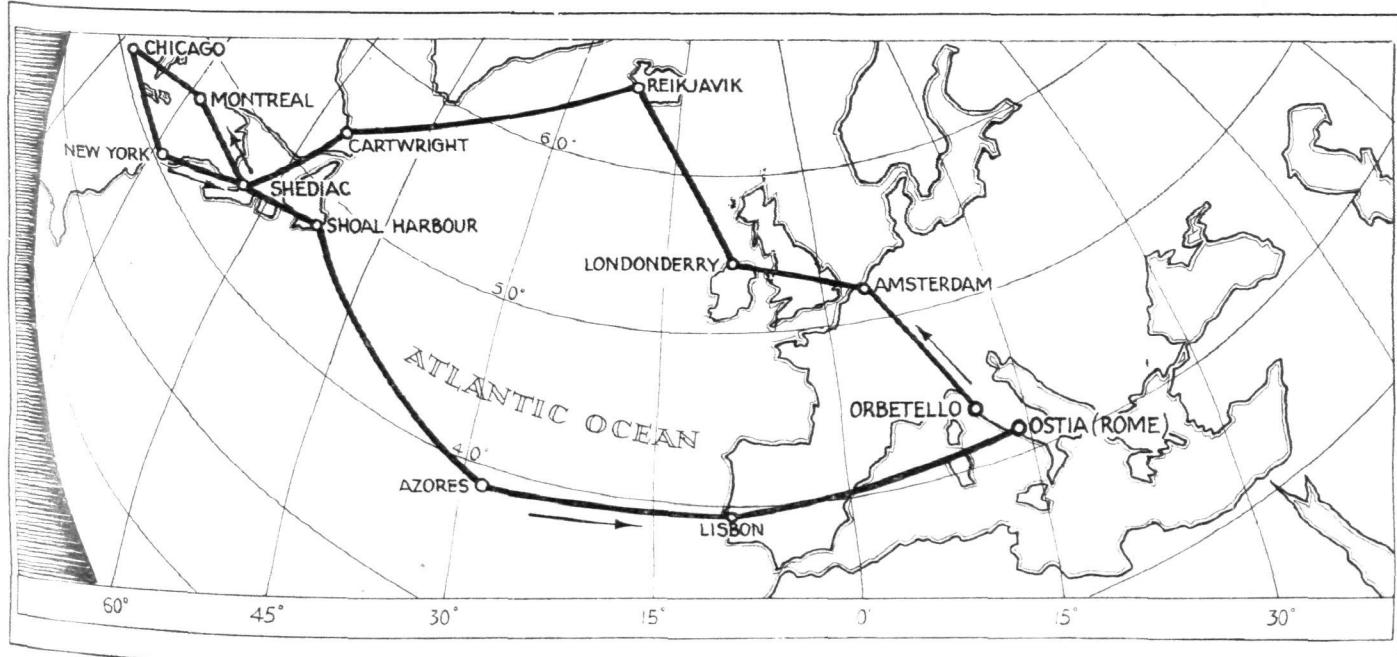
Just after sunset on the same day the squadron appeared on the horizon. A few minutes later, flying in close formation, they crossed the coastline and circled the city of Rome. General Balbo's was the first machine to alight, and as he stepped ashore he was greeted by Signor Mussolini, who, according to the daily Press, embraced the General three times and kissed him on both cheeks. On Sunday, August 13, Rome officially celebrated the return of their successful airmen. The King received them at the Quirino, a procession was formed, which wended its triumphant way through the streets to the Coliseum and the Arch of Constantine. On the heights of the Palatine Hill Mussolini officially received the airmen, congratulating them on the success of the flight, and read a royal decree promoting General Balbo to be Italy's first Air-Marshal. Il Duce then placed upon the General's head a Marshal's hat, pinned a golden eagle on his breast and presented him with a baton of office.

Once again has Italy demonstrated the efficiency of her Air Force. When the 24 Savoia Marchetti twin-hull S.55 X



HOME AGAIN: Some of the Italian flying boats circling over Rome before alighting.

flying boats, powered by two Isotta-Fraschini 18-cylinder engines, set out from Orbetello on July 1, few people



THE ITALIAN CRUISE: Sketch Map of the Route followed by Air-Marshall Balbo and his crews.

imagined, even though they may have hoped, that 23 would arrive safely back to Italy in 43 days' time, having flown over 12,000 miles and crossed the Atlantic Ocean twice. It is a magnificent performance and one of which General Balbo, the officers, N.C.O.'s and men of the whole flight may well be proud. To plan a formation flight of over 12,000 miles with a double crossing of a wide expanse of ocean was ambitious in itself, but to have carried through this project with such success bespeaks not only the complete confidence which General Balbo and others in authority had in their machines and personnel, but also a perseverance and skill which has not often, if ever, been equalled in the past. It is, of course, to be regretted that the flight was marred by two fatal accidents, but even so the Italians are to be congratulated that the number was not greater. After all, it was a writer from Rome of ancient days who said that no success worthy of the name can be achieved without suffering. Rome has seen many triumphs, some in the name of individual glorification, others in the name of conquests, some even in the name of hate and conceit, but rarely can Rome have boasted such a triumph, not only of individuals over the elements of Nature, but of the skill and brains of designers and of organisation which counted the merest detail of great import. The Italian nation has every right and cause to be proud of their Air Force in general, of General Balbo and the personnel of the flight in particular and of the brains which designed the machines and engines.

The following message was sent by Lord Londonderry, the British Air Minister, to Air-Marshal Balbo: "I am glad to learn the news of the return of your Trans-Atlantic squadron to Ostia. A double flight across the Atlantic by so large a formation is a feat of which the Regia Aeronautica may well be proud, and on behalf of the Royal Air Force I send them most cordial congratulations." M. Pierre Cot, the French Air Minister, also sent a message to Air-Marshal Balbo: "At the end of your magnificent exploit I hasten to send you the salutations and congratulations of the French Air Force, which has followed with admiration the triumphant progress of your courageous squadron. I regret that circumstances have not allowed me to express by the spoken word the feelings

of esteem and comradeship which unite our aviation with its Latin sister. My very cordial greetings."

Log of the Flight.

		Miles.
July 1	Orbetello-Amsterdam	875
,, 2	Amsterdam-Londonderry	625
,, 5	Londonderry-Reykjavik	940
,, 12	Reykjavik-Cartwright (Labrador)	1,500
,, 13	Cartwright-Shediac (New Brunswick)	750
,, 14	Shediac-Montreal	500
,, 15	Montreal-Chicago	875
,, 19	Chicago-New York	1,000
,, 25	New York-Shediac	650
,, 26	Shediac-Shoal Harbour (Newfoundland)	500
Aug. 8	Shoal Harbour-Azores	1,200
,, 9	Azores-Lisbon	780
,, 12	Lisbon-Ostia	1,850
		12,045

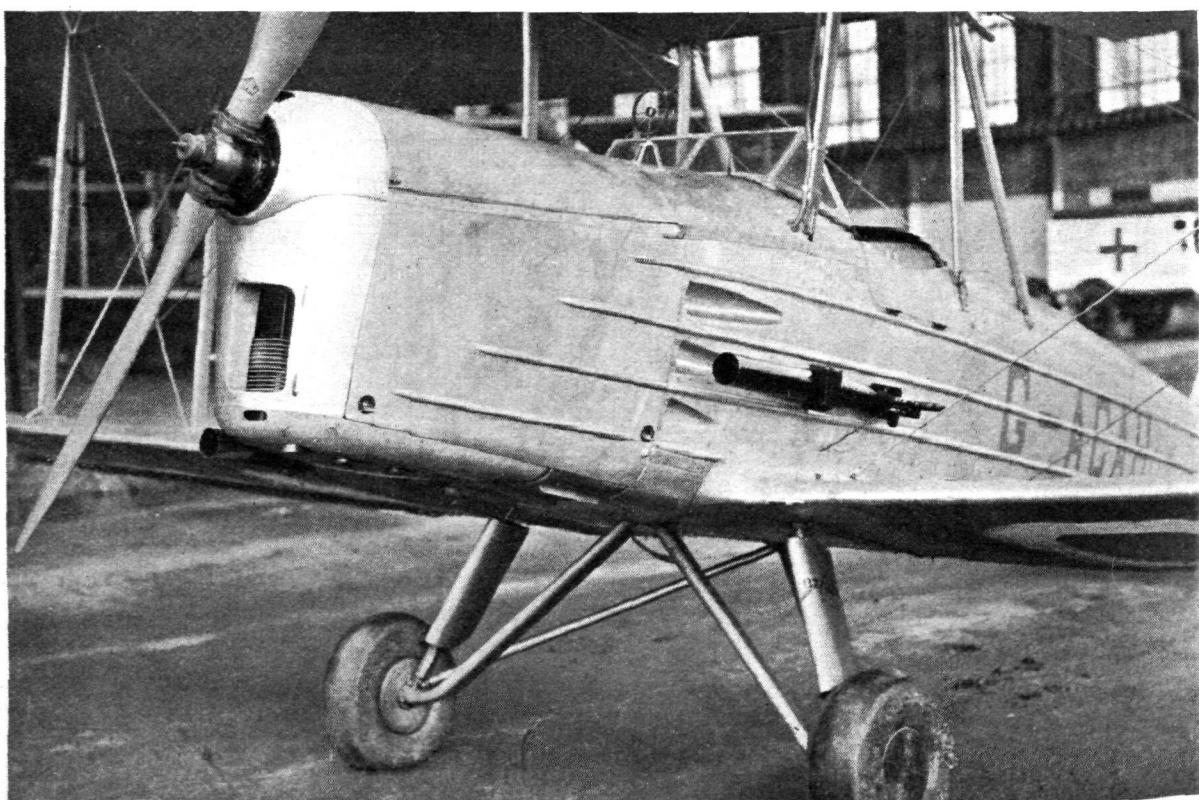
General Balbo in his first report to Mussolini emphasised the valuable assistance that wireless had given, especially during the most difficult sections of the flight over the Atlantic. Six deep-sea trawlers fitted with wireless by the Marconi organisations in Italy and England were stationed at various places to give wireless direction finding services as required. Marchese Marconi and his colleagues placed the world-wide organisation of the Marconi Company at the disposal of the Italian flight. The following telegram was received from General Balbo by the Marconi Company: "I thank you together with all your worthy co-operators for your kind greetings which the Atlantic squadron reciprocate, remembering services rendered by the Marconi Company to the Italian Air Force." Most of the apparatus was specially manufactured at the Marconi works in Genoa, while the direction-finding equipment was supplied from the Company's works in England.



Young Fascist Airmen

THE Italian Government has recently instituted a system of pre-military flying training especially for members of the Young Fascist Association who may wish to enter the Royal Air Force when called up under the

annual levy. These flying courses will be held at 26 cities. At the end of the course, such young men who have qualified will be given "wings," and when called up for service will become sub-lieutenants or sergeant pilots in the Air Force.



A BLACKBURN TRAINING MACHINE : This type is equipped with camera gun, hood for blind-flying, etc., and is fitted with the "Hermes IV" inverted engine. (FLIGHT Photo.)



Inside the Atalanta

THE sound-proof cabin of the Atalanta is light and roomy with a good view from its windows. Its ventilation and temperature are easily and effectively controlled. Nine chair seats afford the utmost comfort for long journeys and, by means of a simple adjustment, can be arranged to provide a restful semi-reclining position with ample support for head and shoulders.

There is accommodation for personal belongings in the wall recesses, and folding tables are an added convenience.

SIR W. G. ARMSTRONG WHITWORTH AIRCRAFT LIMITED

Works and Aerodrome, Coventry, England
London - - 10, Old Bond Street, W.1

BP273

WORLD'S LONG-DISTANCE RECORD BREAKERS SENT THE FOLLOWING CABLEGRAM TO WAKEFIELD HOUSE

+ CASTROL

RELIEVED US OF ALL ANXIETY IN

REGARD TO ENGINE RELIABILITY

COPY OF CABLE SENT US
FROM RAYACK, 8th AUGUST

"Having flown non-stop from New
York thus breaking the world's
long-distance record we send
you our felicitations on producing
Castrol stop This peerless lubricant
has relieved us of all anxiety in
regard to the so vital engine
reliability

ROSSI CODOS"

ROSSI + CODOS

C. C. WAKEFIELD & CO. LTD., ALL-BRITISH FIRM, WAKEFIELD HOUSE, CHEAPSIDE, LONDON, E.C.2

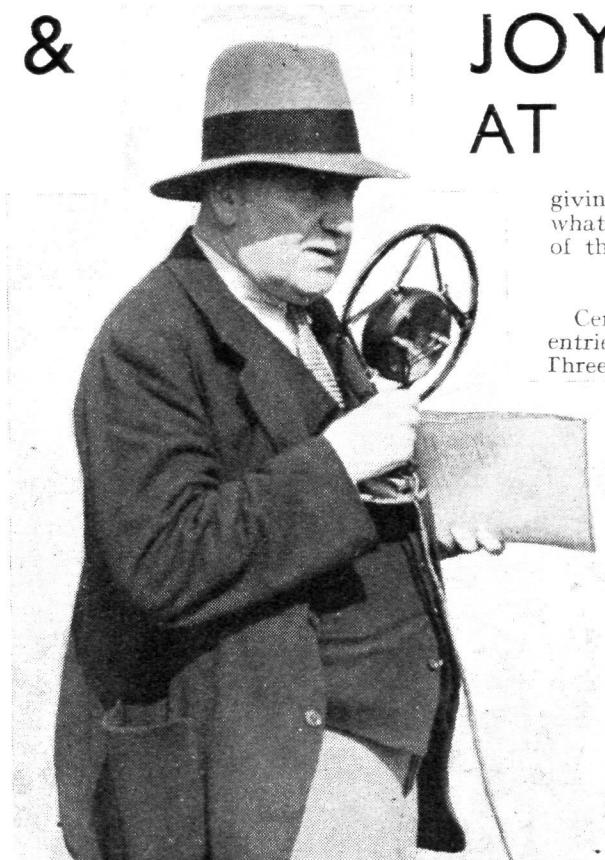
Kindly mention "Flight" when corresponding with advertisers.

RACING &

JOY - RIDING
AT NEWCASTLE

ON Saturday, August 12, the third annual London - Newcastle Race was run from Brooklands Aerodrome, in Surrey, to Cramlington, the aerodrome for Newcastle. Cramlington, by the way, is the aerodrome which has been used for a number of years by, and is the home of, the Newcastle-upon-Tyne Aero Club, one of the oldest aero clubs in this country. The aerodrome itself is not too good, as there is a lot of rough ground at the top end, and on Saturday several people had cause to curse that particular part. Moreover it is nine miles from Newcastle, which is too far for general use. This would seem, however, likely to be changed in the not-far-distant future, as already there is a movement to establish a municipally-owned aerodrome at Wolsington, situated only some four or five miles from the centre of the city. This will be a real advance in aviation, as Newcastle is a vital link in the air communication line between England and Scotland. It is roughly 300 miles from London, or what is more important, just about as far as the average pilot wants to go before refuelling. It therefore becomes the natural port of call on the North-bound route, and as such must be developed. The municipality have realised this fact, hence the scheme for a really fine aerodrome on the Wolsington site.

Reverting to the race. This formed only part of the afternoon's programme, as it coincided with the display given by the British Hospitals Air Pageant. The race started in fine weather with a promise, according to the Air Ministry, of a slight head wind all the way, but subsequent events proved that it changed about half-way,



Sir Joseph Reed, the President of the Newcastle-upon-Tyne Aero Club, opening the British Hospitals Air Pageant at Cramlington on Saturday, August 12. (FLIGHT Photo.)

giving the competitors a wind somewhat abaft the beam for the latter half of their journey.

The Start at Brooklands

Certain changes were to be noted in the entries published in our issue of August 3. Three entries had been scratched, namely

the Pobjoy-Swift entered by Mr. Kilian, the Gipsy Major-Gull entered by Mr. MacGilchrist, and the Spartan "Clipper" entered by Col. Strange. Against that, however, was to be set a late entry, a "Gipsy I Moth," flown by Mr. G. H. Tutt. The Hendy, which was to have been flown by Mr. C. S. Napier, was a non-starter. This brought the number of actual starters in the race down to 10.

Limit man was Mr. Tutt in the "Gipsy I Moth," and Mr. Leech was scratch in the Coupe Deutsch Comper "Swift" (Gipsy Major). All got away well, Mr. Lipton and Mr. Westenra, in "Moths" with Gipsy III and Gipsy Major engines respectively, starting together. Mr. Henshaw's take-off was

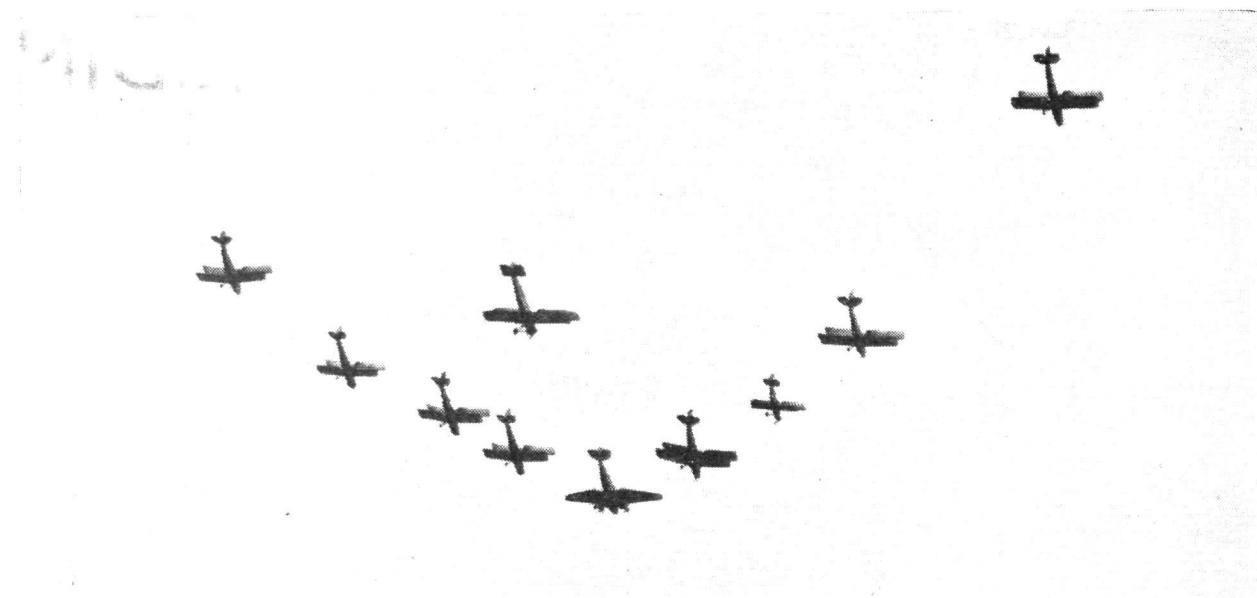
slightly emotioning, and looked as if he was fiddling with something and not quite noticing where he was going, but nothing untoward happened and he got away safely enough.

The machines were, as usual, sent off by Mr. A. G. Reynolds, and Messrs. Dancy and Rowarth were on the spot to act as stewards and general officials as well as handicappers. Guiding the machines on to the starting line, and even hanging on to wing tips, were chance jobs which also came their way. The fact that Capt. Dancy is being transferred from the Air Ministry to the "Eastern Counties" will not, we hope, interfere with the excellent team work of these two popular handicappers, and it might even be worth while for the racing community to buy them a Hawker "Hart" or Fairey "Fox," so that they can in future start the machines from one aerodrome and then, after sending the scratch man off, overtake the lot and be on the finishing line to see the finish at the other aerodrome!

The finish was unfortunately not very interesting. The intervals between the arrivals were relatively very small and testified to the skill of the handicappers. An interval of 30 sec. may be small when considered in the light of a difference between the arrival times of two aircraft after racing for some 260 miles, yet from the point of view of the spectators is a long time. The Hon. Richard Westenra came in first, 1 min. 22 sec. ahead of Sqd. Ldr. W. L. Runciman, who in turn was only 17 sec. ahead of Flt. Lt. G. H. Stainforth. Newcastle was thus well represented in the finish, and all the local people were very jubilant at the result. Westenra was also last year's winner, although for this race he had a "Moth" with a Gipsy Major engine. He must have flown a wonderfully straight course to have averaged 125.27 m.p.h., as he did. Runciman's "Puss Moth" is well known as one of the fastest there is, and as a director of Cramlington Aircraft, Ltd., he has opportunities for getting the machine into the best trim mechanically, besides which his mechanic has a name for knowing how to get that best. He is also in command of No. 607 (County of Durham) (Bomber) Sqd. A.A.F. F/O. H. H. Leech, who made fastest time in the race, also has local connections, as his father, Dr. J. W. Leech, is the Lord Mayor of Newcastle. Fourth home was a Newcastle club member, Mr. G. A. McPhee, on a club "Moth." The only forced landing in the race was that of Mr. A. Henshaw, who had to put his Comper "Swift" down



The first passengers taken up at Cramlington were piloted by Miss Pauline Gower. She has worked with the Hospitals Air Pageant ever since the start in April. Miss Dorothy Spicer, her ground engineer, is seen helping two passengers into their "Spartan" three-seater (Hermes II). (FLIGHT Photo.)



In this formation all the machines of the Pageant fly over the neighbouring towns to advertise themselves. (FLIGHT Photo.)

LONDON (Brooklands)—NEWCASTLE (Cramlington), August 12, 1933

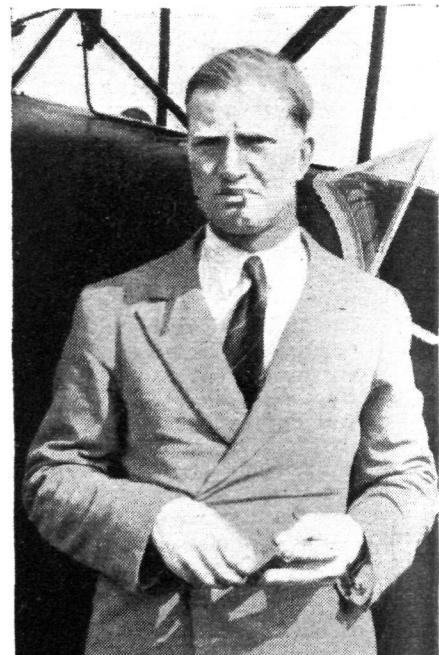
Regn. Mark	Pilot	Aircraft and Engine	Start	Finish	Av. Speed	Place
G-ABPK	C. H. Tutt	Moth (Gipsy I)	13 25 00	16 11 25	95	8
G-ABJN	G. A. McPhee	Moth (Gipsy II)	13 30 09	15 54 41	109½	4
G-ACHK	J. K. Watson	Hawk (Cirrus III)	13 37 36	16 05 47	106½	7
G-ACCW	The Hon. R. Westenra	Moth (Gipsy Major)	13 46 04	15 52 31	125½	FIRST
G-ABVW	L. Lipton	Moth (Gipsy III)	13 46 04	16 14 02	107	9
G-ABUU	Flt. Lt. G. H. Stainforth	Swift (Pobjoy R)	13 53 04	15 54 10	130½	THIRD
G-ABLW	W. L. Runciman	Puss Moth (Gipsy III)	13 54 05	15 53 53	132½	SECOND
G-ACGL	A. Henshaw	Swift (Pobjoy R)	13 56 04	retired at Tring	—	—
G-ACFY	F. P. J. McGevor	Gull (Hermes IV)	14 05 31	16 04 53	132½	6
G-ABWW	F/O. H. H. Leech	Swift (Gipsy Major)	14 21 55	15 57 17	166½	5

at Tring, due, we understand, to magneto distributor trouble. He did so without damage.

We have already described the aims of the British Hospitals Air Pageant, but have not had an opportunity of seeing their show since they started.

They have certainly got down to it, and the general organisation struck us as being good. They get under way in a businesslike manner when they arrive at the aerodrome, and the programme goes smoothly when they start. It can be no small matter to transport the whole of their equipment to a different aerodrome every day, as they have been doing ever since they started at the beginning of April. The ground equipment of Morris vehicles must have done a pretty large mileage by now, but does not look like having done so. The general scheme of the display that is carried out at each town is a programme of events during which joy-riding (the bread and butter of the party!) is carried on as hard as may be. At Cramlington, the distance away of Newcastle and the fact that others have been there, all tended to make the crowd small. Despite this there was quite a fair-sized attend-

C. W. A. Scott,
the leader of the
Pageant, standing
beside his "Fox
Moth" (Gipsy
III).
(FLIGHT Photo.)



ance, but they were not the joy-riding type, and the takings for the day must have been very disappointing.

One of the most impressive things about this joy-riding business, to our mind, is the way the aircraft and engines stand up to the job, and, for that matter, the way the pilots do likewise. Every aircraft constructor ought to be grateful to people like these for finding out the weak spots in their machines for them. The maintenance of the equipment may be of the best quality, but it must of necessity be of the scantiest, otherwise there would be no time for



F/O. H. H. Leech waiting for Mr. Reynolds to drop his flag at Brooklands. Messrs. Dancy and Rowarth, the handicappers, are standing behind the Comper "Swift" (Gipsy Major), but although Leech got the fastest time in the race he did not beat their allowance sufficiently to win.

(FLIGHT Photo.)

FRANCE

chose

BRITISH

K.L.G

PLUGS

for the **WORLD'S
LONG DISTANCE
RECORD FLIGHT**

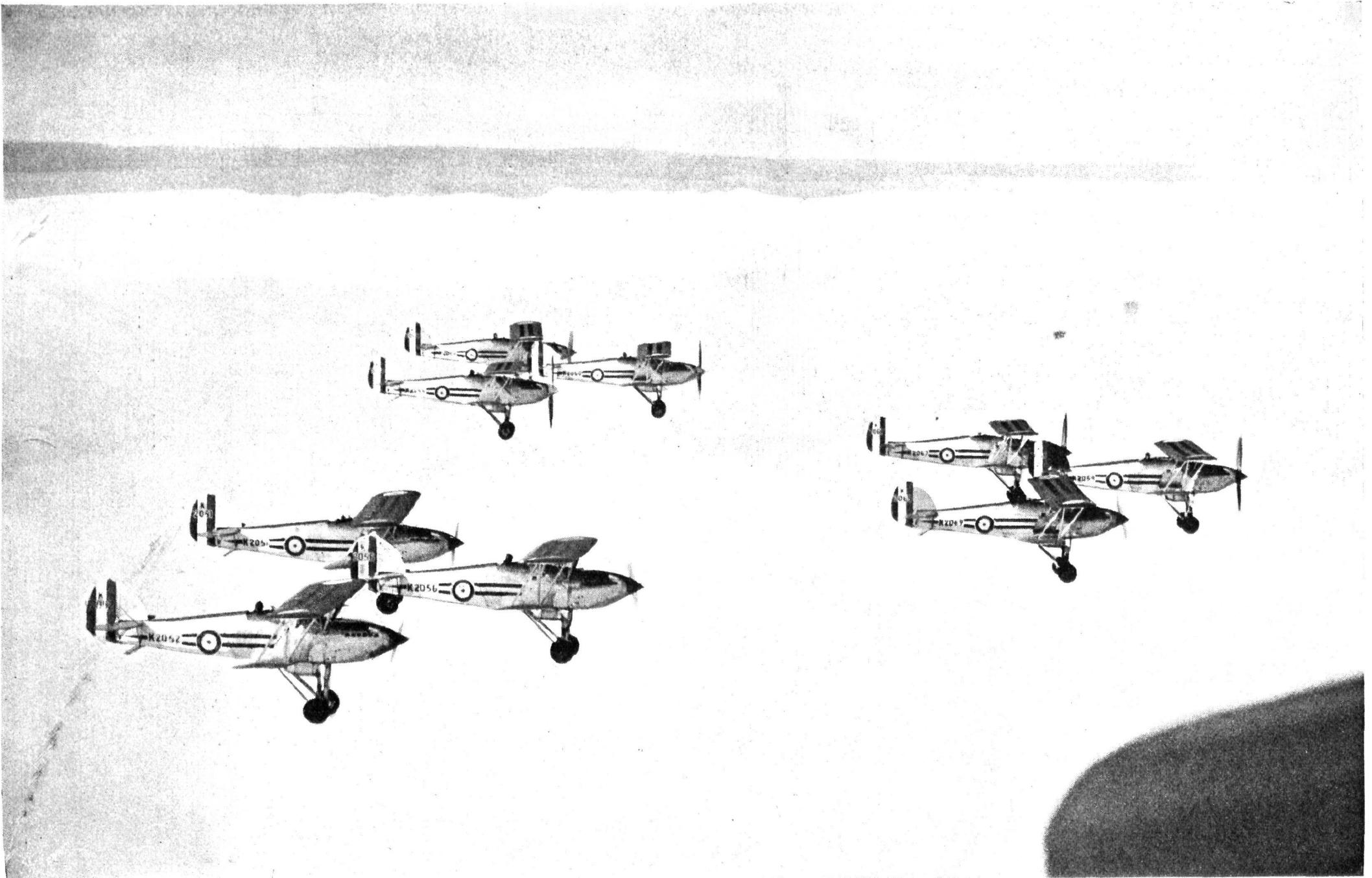


Messieurs Codos and Rossi, who flew from New York to Rayak in an Hispano-Suiza engined Bleriot, could not afford to take the slightest risk in their choice of sparking plugs —

all were available — K.L.G's were chosen!

K.L.G SPARKING PLUGS, LTD., PUTNEY VALE, LONDON, S.W.15.

Save time by using the Air Mail.

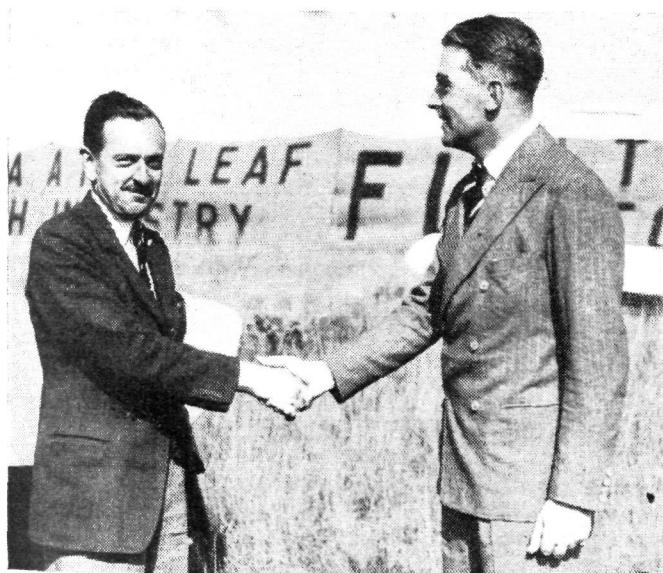


OUT TO INTERCEPT: No. 25 (Fighter) Squadron (Hawker "Furies" with Rolls-Royce "Kestrel" Engines) Flying above the Clouds.
(*"Flight"* Photo.)

Advt.



On the left, the winner of the London-Newcastle Race, the Hon. R. Westenra, is seen taking off at Brooklands, and on the right he is finishing at Cramlington. In the centre, Sqd. Ldr. W. L. Runciman, who came in second, is starting away. (FLIGHT Photos.)



The Hon. R. Westenra (left), the winner, shakes hands with Sqd. Ldr. W. Runciman, who just failed to beat him in the race. (FLIGHT Photo.)

work. Nevertheless few aircraft have given any real trouble, while some of the new ones, like the Monospar for example, which have never been used for such strenuous work and which are of radically different construction from that of other types, have proved themselves to be trouble free.

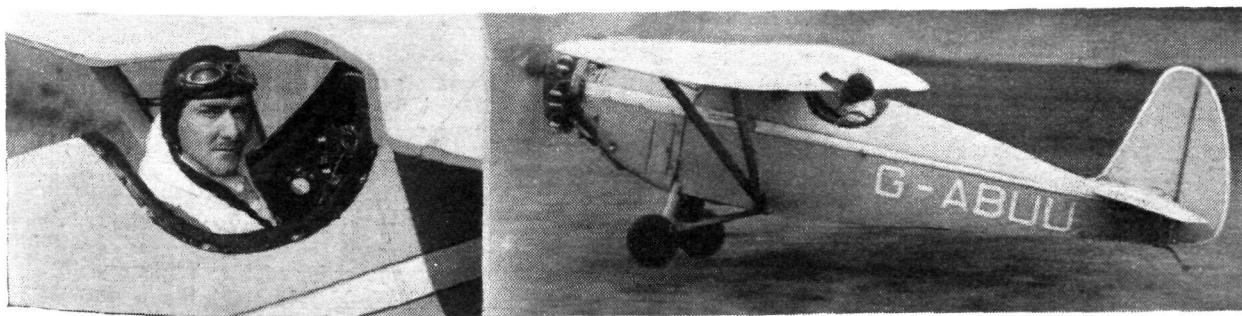
As we have said, the programme has been boiled down to a fine art and all the participants are well versed in their "turns." We cannot describe the whole of it, but mention certainly ought to be made of the wireless-controlled flying lesson, and also dancing to music on the "Moth" which C. W. A. Scott, himself leader of the

display, flew from Australia to England. The latter item is done most excellently by Mr. J. B. Pugh, whose original conception of dancing goes down very well indeed with the spectators.

Of course, the success of an organisation like this depends to a large extent on the publicity given it in each town before it arrives there. On this occasion this would appear to be one of the few things deserving somewhat severe criticism. During the previous day in Newcastle we did not see a single poster or placard about the display. Even in the adjoining villages there was a definite paucity of publicity, and it is hardly to be expected that people will come to see a show they know nothing about! However, we gather that this is not always the case, and that the organisation has already given a large amount of money to the hospitals; which is what it set out to do. It must be extraordinarily hard work for everyone, especially the pilots, and more especially still if they are girls as is the case here, where Miss Pauline Gower is flying her Spartan three-seater, and her friend, Miss Dorothy Spicer, is acting as her ground engineer (for which job she is fully qualified). So we hope that for the remaining two months of their tour they do better for themselves than they did at Newcastle—they deserve it.

Following the race and the display, there was a dinner and dance, held by the Club, in the evening. Newcastle, that is the Aero Club at any rate, is well known for its hospitality, and Saturday evening was no exception to the rule. The attendance was not too large and there was comfortable room for dancing.

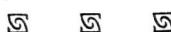
Col. Sir Joseph Reed, President of the Club, introduced Mrs. Runciman, who gave away the prizes. The "Newcastle-upon-Tyne" Trophy and cheque for £75, which should have been received by the Hon. R. Westenra, were received on his behalf by Mr. R. R. Bentley, as the rightful recipient had had to leave directly after the finish of the race, together with Mrs. Westenra, who visited the meeting in her "Puss Moth." Sqd. Ldr. Runciman and Flt. Lt. Stainforth were given cheques for £20 and £10 respectively, while F/O. Leech got the special prize of £10 for fastest time, his Comper "Swift" (Gipsy Major) having brought him up at 166.09 m.p.h. Mr. J. D. Irving,



Flt. Lt. G. H. Stainforth, who came in third in the London-Newcastle Race, is here seen in the cockpit and also taking off in his Comper "Swift" (Pobjoy). (FLIGHT Photos.)

the Chairman of the Club, expressed a welcome to the guests; in a very few words—he is not as fluent on occasions like these as he is during the ordinary course of a flying meeting—he said that the Club was very glad indeed to have their guests there that evening, and he asked Mr. Ivor McClure to reply for them. Mr. McClure is fluent, and he had much to say. We wish that we could, with words, paint a true conception of his forceful yet graceful delivery. He impressed on those present that Newcastle ought to develop the new aerodrome as soon as

possible, and made the same points about it as those to which we have already referred. McClure can, besides being forceful, also be very humorous, and we suggest that as an item for a flying meeting—one which might relieve the tedium of flying events—he ought to be induced to have a microphone debate with, say, Mr. Phillip Wills. On a subject like the abolition of landing fees on Government aerodromes for private owners they ought to be well worth hearing. We put the suggestion forward for what it is worth.



A NOVEL AIR DRIVE SYSTEM FOR TENDERS

By EDWIN P. A. HEINZE

FOR the servicing of flying boats and float seaplanes, easily-maneuvrable motor boats, with as small draught as possible to enable them to come right up to the shore, are exceedingly useful. Boats with normal water-screw propulsion cannot in all cases meet the requirements, so, for instance, not on some African lakes with weeded shores. Propulsion by means of airscrews is being used here and there on African and American rivers, but it has grave drawbacks and is entirely unsuitable for aircraft tenders, as the open propeller is a source of danger to men and material. Ropes, overhanging branches, etc., can cause damage to the propeller, the flying bits of which can injure people.

A new propeller-drive system evolved in Germany is, therefore, of some interest, as it does away with the disadvantages of the normal propeller drive and is yet of great simplicity. The invention is patented in all countries and has already been thoroughly tried out. Several units are in constant service, although not as aircraft tenders. Plans for a number of boats to be used by a Government in Asia for patrolling rivers are being prepared, and it also looks as if the new drive system is going to play an important rôle in the upper reaches of American rivers.

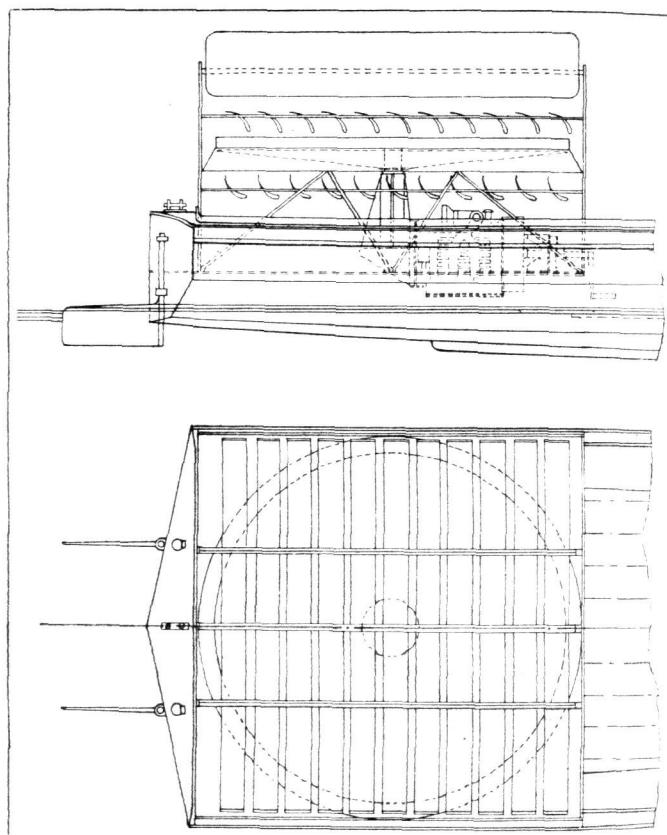
The invention merely consists of a horizontal propeller revolving inside a jet ring and driven by an air-cooled petrol engine underneath it. The air is drawn in from below and blown perpendicularly up through deflector blades. Above the propeller is arranged a series of parallel blades lying athwart the boat in a frame. These blades are interconnected and pivoted so they can be turned together by a single lever to any angle in relation to the propeller slipstream, so the latter is deflected by them. Thereby a pressure is exerted on the blades, which is communicated as propulsive force through their framework to the boat. By various angular settings of the blades, the speed of the boat can be regulated, and a great advantage of the system is that it provides exceedingly simple and instantly effective control, as one can change from full ahead to full reverse by just one pull of the lever controlling the deflector blades. When these stand upright, no propulsive force is generated, as then the propeller stream just passes upward between the blades into the atmosphere. A similar set of deflection blades can be fitted below the propeller—that is, on its suction side—and also coupled with the control lever.

Not only fore-and-aft motion can be thus controlled, but also the steering by fitting one or several rudder surfaces above the top deflection blades in the longitudinal direction of the boat. The lateral inclination of these rudders deflects the air current coming up through the deflection blades to the one or other side and causes the boat to swerve round. The boat can actually be



For Fast Touring

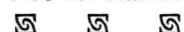
Those who are desirous of obtaining an aeroplane which will get them about the country at high speed, but which will still enable them to land at a comparatively low speed, will be interested to hear of the latest production of that well-known designer, Mr. B. B. Henderson. His "302," when it first came out of the workshops of the Hendy Aircraft Co. at Shoreham-by-Sea, was admittedly the fastest of its type; since that time others have been built which have reached the same performance, but, if Mr. Henderson's figures are substantiated when his new machine comes out, and they usually are, he will again be producing the fastest cabin aircraft in this country. His "3308," as the new machine is called, will be a two-seater tandem cabin aeroplane, and will, we understand,



made to turn on the spot, and the control lever for the rudder can be united with that for the deflection blades, forming a kind of joy-stick, the lateral movement of which controls steering, while the fore and aft movement controls speed forward, stop and reverse. During no phase of manoeuvring need the engine controls be touched.

A number of portable units have been constructed and are being used for propelling heavy utility craft, as, for instance, prams employed for weeding shallow waterways and lakes. A unit with a small 16-h.p. two-stroke engine supplies a propulsive force of 130 to 155 lb. and a 22-ft. boat equipped with it temporarily easily towed a 24-ton pram. Another unit, with a 27-b.h.p. engine, supplies a propulsive force of 250 to 280 lb. The actual loss through the deflection of the propeller slipstream lies between 5 and 10 per cent., and is therefore negligible in consideration of the advantages offered by the system with its wholly-enclosed propeller, its low build and simple control.

The patrol boat illustrated in the drawing has a draught of 11½ in. and is 25 ft. long, with a beam of 8.2 ft. It is to be fitted with a 60-h.p. air-cooled Krupp petrol engine, which will drive a four-bladed propeller of 7.38 ft. diameter and give a thrust of 500 to 550 lb.



follow the same general lines as the "302," which it will be remembered was a low-wing job. It will have a retractable undercarriage, and, powered with the Napier "Javelin" engine, is estimated to have a maximum speed of 190 m.p.h. at ground level, with a landing speed of 55 m.p.h. and a cruising speed of 165 m.p.h. The normal range will be 825 miles and the rate of climb 1,100 ft./min.

The first of the type is already under construction, and is being built to the order of Mr. Whitney Straight, whose exploits on the Brooklands track have brought him into the limelight. It is perhaps not so well known that he also flies. He finds that he needs something faster than the machine he at present uses; hence this new Hendy "3308." The Aircraft, Exchange & Mart, 7, Park Lane, London, W.1, will be the sole agents for the new type.

Some British Triumphs with NAPIER Aero Engines

1918 A Napier-engined D.H. aeroplane climbed to a height of 30,500 ft. in 66 min., the greatest height at this date reached by an aeroplane.

1919 A Napier engined D.H. aeroplane won the Aerial Derby. Speed, 129.3 m.p.h.

1921 A Napier engined Gloster aeroplane won the Aerial Derby. Speed, 163.4 m.p.h.

1922 A Napier-engined Supermarine flying boat regained the Schneider Trophy for Great Britain at a speed of 149 m.p.h.

1923 A Napier-engined Gloster aeroplane won the Aerial Derby. Speed, 192.4 m.p.h.

1926 The first non-stop crossing of South Atlantic Ocean carried out by Commandante Franco flying a Dornier flying boat with two Napier engines.

1927 Schneider Trophy regained for Great Britain by a Supermarine-Napier seaplane flown by Ft.-Lieut. S. N. Webster, A.F.C. Speed, 281.669 m.p.h. Two machines completed the course—both fitted with Napier engines.

1928 The greatest formation flight ever carried out was made with four Supermarine-Napier Southampton flying boats, each fitted with two Napier engines. The machines flew from England to Australia, round Australia, and back to Singapore, covering 180,800 engine miles without mechanical trouble.

1929 The first non-stop flight from England to India was carried out with a Fairey monoplane fitted with Napier engine. 4,130 miles in 50 hr. 38 min.

1930 For the fifth successive year Napier engines were selected by the Royal Air Force for their annual Service flight from Cairo to Cape Town and back. As on previous flights, no mechanical trouble was experienced.

1931 The first and only non-stop flight from England to Egypt was carried out with a Fairey monoplane fitted with Napier engine. 2,857 miles in 30 hr.

1932 Captain Sir Malcolm Campbell set up a World's Land Speed Record of 253.968 m.p.h. with his Napier-engined "Bluebird" car.

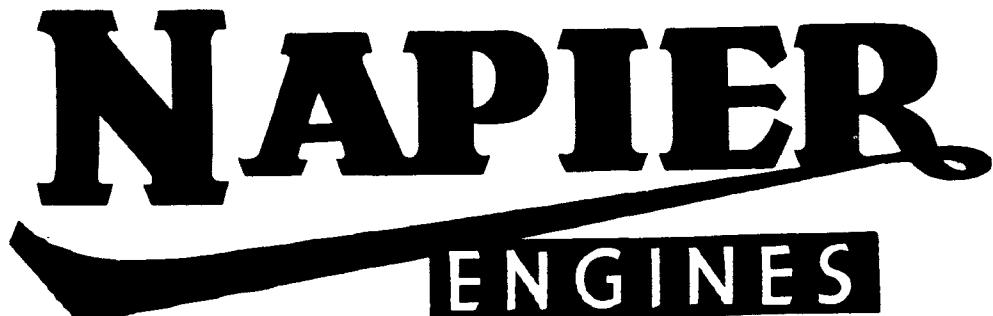
1932 Fourteen officers and 534 men were transported from Ismailia to Iraq and back—a distance of 1,728 miles over nearly waterless desert. The aircraft used were Vickers "Victoria" troop carriers, each fitted with two Napier Lion engines.

1933

Squadron-Leader O. R. Gayford, D.F.C., A.F.C., and Flight-Lieut. G. E. Nicholetts, A.F.C., by flying a Fairey (Napier) monoplane from Cranwell, England, to Walvis Bay, South-West Africa, set up a World's long distance non-stop flight record—a distance of 5,309 miles covered in 57 hr. 25 min.

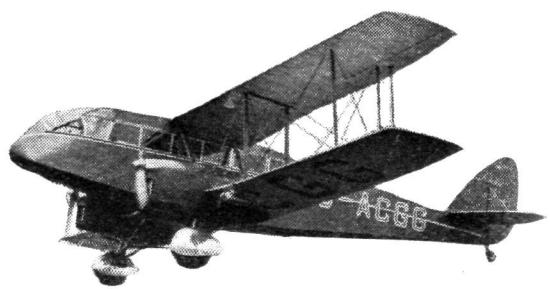
New types of Napier Engines now being developed give promise of an improved performance which will enhance this record.

NAPIER



ENGINES

D. NAPIER & SON, LTD., ACTON, LONDON, W.3



43
DRAGONS
SOLD
IN
SEVEN
MONTHS



THE DE HAVILLAND AIRCRAFT COMPANY,
LIMITED.
STAG LANE, AERODROME, EDGWARE,
MIDDLESEX, ENGLAND.
ASSOCIATED COMPANIES IN CANADA,
AUSTRALIA, S. AFRICA AND INDIA.
LICENCEES, SELLING AND SERVICE AGENTS
THROUGHOUT THE WORLD.

Kindly mention "Flight" when corresponding with advertisers.

FROM THE CLUBS

BROOKLANDS

The last week has seen considerable activity at Brooklands, the Flying School having been particularly busy. The following new members started flying instruction:—Miss de Zouche, Messrs. Elives, Dawson, Fotheringham, Hancock, Kaye, Naish, Scott-Moncrieff, and Whitton. Lady East Clayton-East has made her headquarters at Brooklands, and is taking advanced dual on her own machine. Owing to the success of the last "Autogiro" party, another has been arranged for Sunday, August 20. Maj. Empson had a christening party for his recently acquired Bristol "Fighter" on which he is having tuition in the early mornings. Mr. T. H. van Marken has returned to Holland, where he is now the de Havilland agent with headquarters at Amsterdam. There is a general feeling of regret at his departure, but it is hoped that he will be able to pay frequent visits to this country. Successful cross-country flights were carried out by Messrs. Stevens, Telders, and Frost. Flying hours for the week totalled 72 hr. dual and 50 hr. solo. Capt. Max Findlay took up his new duties on Saturday, August 5. It should be noted that the subscription to Brooklands Flying Club is now only £2 2s. for the remainder of the year. Brooklands Airways have been doing considerable flying. During the Bank holiday week-end Mr. Ledlie took a wedding party to Rotterdam, Amsterdam, Stockholm, and Paris, while the Isle of Wight, Le Touquet, and the Norfolk Broads have been visited several times.

HANWORTH (N.F.S.)

Owing to the fact that a large number of members were away on holiday, the flying hours for the past week only totalled 68. Cross-country flights during the week including Mr. Bramson to Ford aerodrome and back (twice), Mr. Back to Shoreham, Mr. Walters to Hatfield, Mr. Back also to Ford and two return trips to Bognor, and Mr. Kirwan dual to Aldeburgh and return. During the week Capt. Wilson flew two passengers to Penshurst, and Mr. Coles to Brooklands. Mr. Llewellyn flew Mr. Beard to Reading. Visitors included Lady Heath, who was given a test by Capt. Wilson; F/O. Kyle with four friends, to whom he gave joy rides; and Mr. Johnson, a member of the Blackpool and Fylde Aero Club. The Master of Sempill flew to the Lizard for the week-end and returned on Tuesday, August 8, with two passengers. Mr. White flew his D.H. "Dragon" to Gleneagles; Mr. Allen flew to Bognor and to Basingstoke, where he gave the Duke of Wellington (who is 85 years of age) and his granddaughters their first flights; and Mr. Bentley flew to Ireland and to Plymouth.

HULL AERO CLUB

The two remaining Aviation days will be held on Saturday, August 19, when the Hull Ministry of Labour Employment Exchange staff will visit the aerodrome, and

Thursday, August 24, when Messrs. Woolworths, Ltd., will be paid a return visit. A dance will be held on Saturday, August 26.

READING AERO CLUB

Flying times for the week ending August 10 totalled 98 hr. The number of pupils at present under instruction is 22. New pupils are Messrs. Burns, Humphreys, Clarke, Taylor, Woodhouse, and Allen. First solos were done by Messrs. Ley and Clarke.

SOUTHERN AERO CLUB

At the invitation of the Officer Commanding the 5th Royal Queen's Regiment, members of the Club made two bombing raids on the troops at manoeuvres. The attacks were successful and impeded the operations of the troops; direct hits were registered on the Battalion H.Q., the Sergt.-Major, and a transport horse. In the opinion of many, no more popular objects could have been selected. [What is the grudge against the horse?—Ed.] As a result of these raids many visitors from the camp turned up at the Club. Miss Mappell and Mr. S. G. Stevens left in the latter's "Avian" for Mannheim, Germany, on Saturday, August 12.

MAIDSTONE AERO CLUB

In spite of the holidays, the School of Flying has been very busy during the past week. Mr. Wicks, the representative of the "Kent Messenger," who is learning to fly, has started tests for his "A" licence. The School carried out the joyriding at the Staplehurst Fête and Pageant, and many new recruits were persuaded to take an active interest in aviation. The Club are holding their monthly "At Home" on Sunday, September 3.

PORTSMOUTH AERO CLUB

A handicap race, organised by the Portsmouth Aero Club, will be held on Wednesday, September 6. It will be open to all private "A" licence pilots, the course being round the Isle of Wight, starting and finishing at Portsmouth Airport. It is hoped to make the race an annual event, the first prize being a £50 trophy, which, if won three times running by the same pilot, becomes his, or her's, for good. The entrance fee will be £1.

YORKSHIRE AEROPLANE CLUB

Large crowds attended the National Aviation Day display which was held at Yeadon on Saturday, August 5, and several Club machines went to Ganton, Scarborough, on Monday, August 7, to the Air Display there, some competing in the air race, and Mr. G. W. Garnett carrying off a prize in the arrival competition. Visiting machines included the Vacuum Oil Co.'s D.H. "Dragon," an "Avian" piloted by Mr. Wynn, of Nottingham, a "Puss Moth" from Scarborough, and a "Puss Moth" of Hillman's Airways.



TAKING DELIVERY: Sir Derwent Hall Caine standing by the de Havilland "Leopard Moth" ("Gipsy Major") which has just been delivered to him. This is the machine entered by Sir Derwent in the King's Cup Race, and flown by Mr. Styran. (FLIGHT Photo.)

NORFOLK AND NORWICH AERO CLUB

The Club started work again on Thursday, August 10, after the staff August Bank Holiday. The flying last week was creditable and included a cross-country flight by Mr. A. J. S. Morris, who took Capt. P. O'Kelly to Gatwick. Mr. J. Collier gave a short display of aerobatics at Potter Heigham Regatta on Thursday afternoon, August 10. Two new members are Mrs. H. Wilson, of Hingham Hall, and Mr. R. T. W. Ketton-Cremer, of Felbrigg Hall. Instruction was given to Mr. and Mrs. H. Wilson, Miss V. Inglis, Messrs. J. Watson, Frank Paul, J. C. Smith, and Capt. D. P. O'Kelly. Soloists were Messrs. A. J. S. Morris, A. J. Sayer, A. R. Colman, W. O'Brien, H. C. Stringer and S. Hansel. The "fly-off" for the Presidents' Trophy took place during the week-end and was won by Mr. Colman after he and Mr. Sayer had tied for first place. Next Saturday Sir Alan Cobham's Circus will give two displays at the aerodrome at 2.15 p.m., and at 7 p.m. On Saturday, September 2, the Club are holding an Aerial Garden Party. There will be competitions, demonstrations of machines, a treasure hunt and a dance.

SOUTHEND FLYING CLUB

On Saturday, August 12, Mr. and Mrs. Douglas Crouter took off, on their honeymoon, for an unknown

destination. The machine was suitably decorated. On Wednesday, August 9, the local branch of the London Co-operative Society Flying Club paid a visit to the aerodrome. During the Week-end Messrs. Ellison and Sylvester flew to Hatfield and on to Portsmouth. Capt. Love flew a passenger to Lympne, and other Taxi work included a trip to Maylands, and a charter by Messrs. Ekco's on urgent business to Hanworth.

THAMES VALLEY FLYING CLUB

The newly-formed Thames Valley Flying Club will operate from the aerodrome on the Kingston By-Pass within a few hundred yards of the Ace of Spades. This aerodrome will in future be called Hook aerodrome. It has been considerably enlarged, a temporary club house has been erected, a hangar is about to be constructed, and petrol, oil and service are available. The Vice-Presidents of the Club include the Master of Sempill, the Hon. Mrs. Victor Bruce, the Hon. Geoffrey Cunliffe and E. R. Valli, Esq. Mr. Travers Griffin is Chairman, Mr. G. R. Gosselin, Hon. Secretary, and the Hon. Mrs. Victor Bruce, Hon. Treasurer. The membership is at present 78 and one Moth has already been purchased. An Aerial Garden Party and Display is being held on September 6, in aid of the Surbiton Hospital.

**GLIDING IN YORKSHIRE**

DURING the latter end of July and the beginning of August Major H. Petre, Mr. J. P. Dewsberry, assisted at times by Flt. Lt. G. U. Buxton and Mr. R. G. Robertson, made a tour of the Yorkshire moors and Pennine range in order to get in some gliding. They took with them the "Crested Wren," and for the part of the time when Mr. Buxton was there they had his "Scud II," and, when Mr. Slingsby came, his British built "Falcon." The moors visited were Sutton Bank, Ingleby Greenhow and the Pennine range. In the latter it was found impossible to do any serious soaring as the clouds were almost invariably above the top of the hills when the wind was S.W., which is the most suitable direction for that part. At Sutton Bank, however, and Ingleby Greenhow a great deal of work was done, over 23 hours being flown by the party between July 23 and August 6, and at times heights of up to 1,700 ft. above the launching point were reached. One of the most interesting points of the outing was the discovery of the fact that the work could be done with only two people. This is largely accounted for by the fact that there was either a road along the top of the particular slope it was wished to use, or alternatively the dry weather had made the ground so hard that it was quite possible to drive a motor car straight over it. During the times when Major Petre and Mr. Dewsberry were alone they found no

difficulty in one of them launching the machine by the motor car in the usual manner with a long length of cord attached to another long length of shock absorber.

The Yorkshire moors would appear to be an excellent site for a gliding expedition such as this. Ingleby Greenhow can be used whenever the wind is W. or N.W. Black Hambleton moor is good with a N.W. wind, while Sutton Bank is quite suitable when the wind is W.S.W. or S.W. During the whole of their trip there were only three days upon which they could not glide, two of these due to there being no wind at all and one due to there being too much. Generally speaking, no difficulty was experienced in getting permission to fly on any of the sites chosen, and when it was required help was generally obtainable, but as we have already said this was usually dispensed with. Mr. Dewsberry would seem to have had a penchant for staying in the air a long time, and during their holiday he made four flights of over two hours each. Major Petre, on the other hand, seemed to specialise in gaining height quickly. One of the most interesting aspects of the trip was the opportunity which it afforded to the party for the study of weather phenomena. On many occasions the formation of cloud banks and other similar matters was watched from the very start, and there is no doubt that a great deal of information was gained by this method.



BRITISH AIRCRAFT IN THE FAR EAST: A batch of Avro "Avians" with "Hermes II" engines in the hangar at Kai Tak aerodrome. There are approximately 50 "Avians" in China, fitted with either the "Hermes II" or "Cirrus III" engines.

**Peculiar Accident in Morocco**

ONE officer and three other ranks of the French Air Service recently lost their lives while on active service in

Morocco. One machine while bombing turbulent tribesmen was struck by a bomb from another machine higher up; the former machine was blown to bits. Another machine got into a spin and did not recover.

LONDON TO CARDIFF AIR RACE

won by Capt. A. J. Styran flying
Sir Derwent Hall Caine's de
Havilland Leopard Moth
(Gipsy Major Engine).

CINQUE PORTS WAKEFIELD CUP

won by Mr. H. Probyn, flying a
Miles "Hawk," Cirrus III
engine.

BOTH WON ON

SPECIAL SHELL PETROL



Holl and

Save time by using the Air Mail.

AVRO AEROPLANES

have constituted the standard training equipment of the British Royal Air Force since 1917, and are also used by most of the principal Air Forces of the world.

The present series, which includes the 626, Tutor and Cadet, satisfies every practical training requirement, and comprises the most complete range ever produced by one factory—a factory possessing sixteen years' uninterrupted experience of training requirements.



A. V. ROE & CO. LTD., NEWTON HEATH, MANCHESTER + Cables: TRIPLANE, MANCHESTER



"ALONG THE LINE THE SIGNAL RAN": He who runs may read (if he can). (FLIGHT Photo.)

No. 3 FLYING TRAINING SCHOOL, GRANTHAM

By MAJOR F. A. de V. ROBERTSON, V.D.

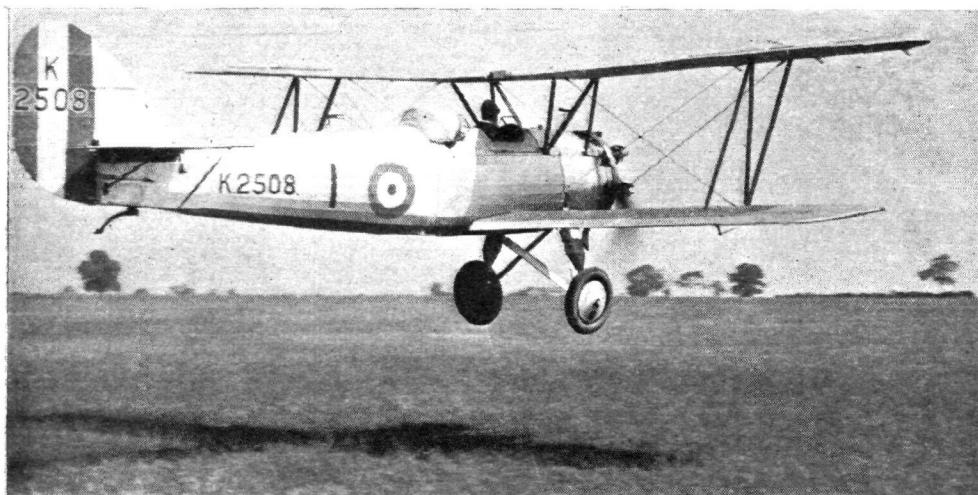
SPITTEGATE is a name which will recall memories to many pilots of the war years. The aerodrome which they knew still exists, but it is now called Grantham, and it is the home of No. 3 Flying Training School. It stands on high ground just outside the town of Grantham, in Lincolnshire, and as Grantham is on the Great North Road, it is easily accessible from everywhere.

The world outside the Royal Air Force may know that there are such things as Flying Training Schools. It

knows, for instance, that in the Air Estimates of a few years ago the F.T.S. at Netheravon was closed down in the interests of economy, and that in the last Air Estimates it was decided to close down the F.T.S. at Digby. Thus does the cause of economy bring fame to its victims. It is doubtful, however, if the outside public has any clear idea of the work of the Flying Training Schools. We may explain to our civilian or ex-Service readers that officers of the Royal Air Force of the General Duties (*i.e.*, flying) branch are drawn from three sources. Officers with per-



FLYING INSTRUCTORS: Names (left to right)—Sgt. J. D. Rose, Sgt. H. J. King, Sgt. S. J. Mansell, Flt. Lt. H. L. P. Lester, F/O. J. G. Llewelyn, F/O. V. C. F. Streatfield, Fit. Lt. R. W. K. Stevens, Fit. Lt. R. F. Gandy, Sqd. Ldr. G. S. Oddie, D.F.C., A.F.C. (Chief Flying Instructor), Flt. Lt. A. R. Combe, Flt. Lt. H. M. Groves, F/O. R. B. Councill, F/O. J. A. J. Stratton, F/O. A. H. Abbott, Sgt. R. Middleton, Sgt. C. A. Gledhill. (FLIGHT Photo.)



INSTRUMENT FLYING : The pupil is under the hood in the rear cockpit. (FLIGHT Photo.)

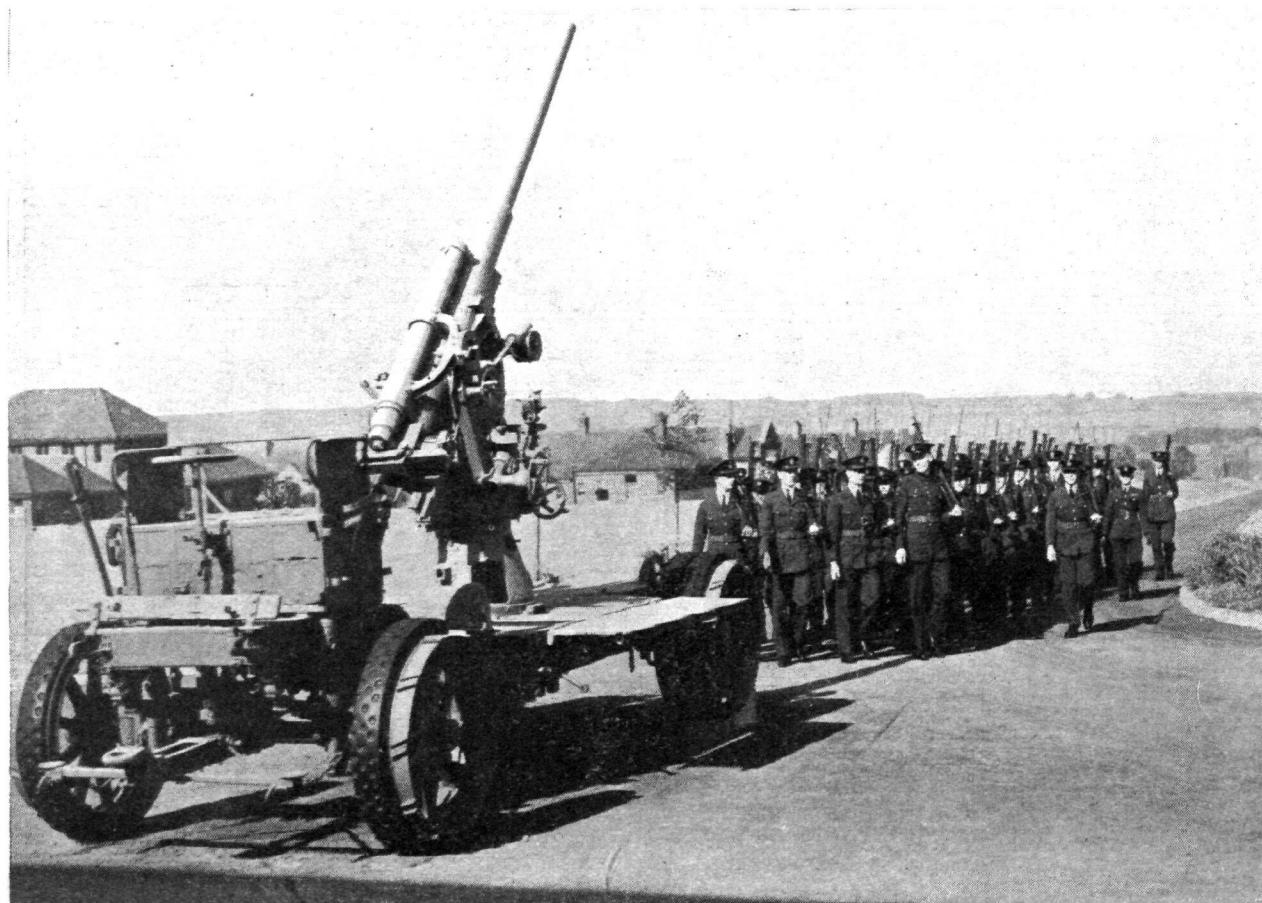
manent commissions come either from Cranwell or from approved Universities, usually Oxford and Cambridge. The Cranwell men are taught to fly at the R.A.F. College, and have earned their right to wear wings when they pass out. The University men are given permanent commissions on entry. They may have learned to fly in the Air Squadrions of their respective Universities. In any case they are sent to one of the Flying Training Schools. The other source of officers is the Short Service commission system. These officers receive their commissions by direct appointment, after being interviewed by a Selecting Board. After that interview they have to pass the medical examination, which demands a very high standard of physical fitness. Then the candidate is gazetted Acting Pilot Officer on probation, and is sent to Uxbridge for a fortnight or three weeks, where he is given preliminary instruction in such matters as pay and allowances, non-public accounts, hygiene, Air Force law, official correspondence, drill, and mess etiquette. After that he is posted to a Flying Training School as an officer under instruction. His Short Service commission is for six years, to be followed by four

years on the Reserve of Air Force Officers, and of those six years he spends one at the Flying Training School. A very busy year it is, too.

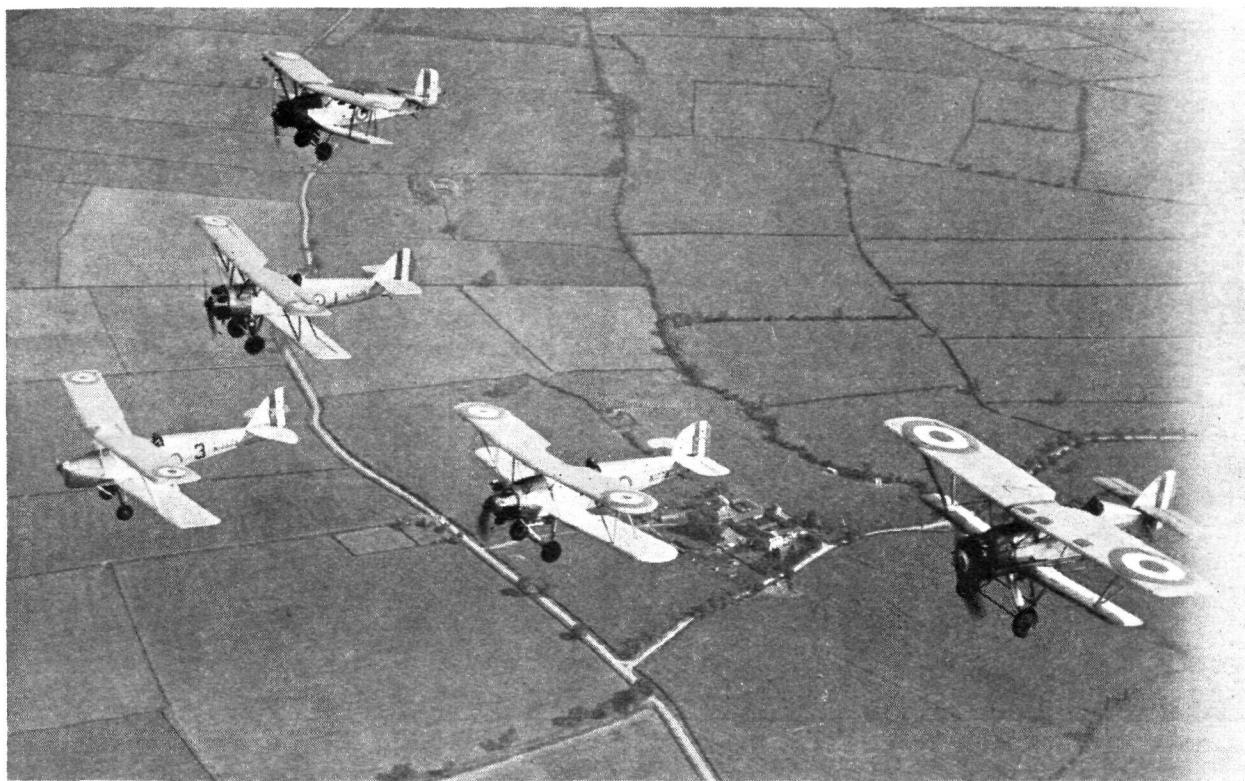
It may be mentioned here that when Digby is closed down there will remain two F.T. Schools in Great Britain, No. 3 at Grantham and No. 5 at Sealand, while No. 4 F.T.S. is at Abu Sueir, in Egypt. In addition to training the S.S. commission officers, an F.T.S. has also to give necessary instruction to airmen, mostly L.A.C.'s, who

are sent up to be trained as airmen pilots. On an average, a term of pupils consists of 27, of whom about 18 are officers and nine are airmen, but the numbers fluctuate. The present establishment of pupils at Grantham is 54, and the terms come up in the spring and the autumn, so that there is always a senior term and a junior term in residence. University officers who have already qualified for "Wings" are usually attached to the senior term direct.

The officer pupils are all young men of very good education—they would have no chance of receiving commissions if they were not—and all are between the ages of 18 and 25. Despite their short time at Uxbridge, they are all practically unacquainted with Service matters when they arrive at the F.T.S. Just occasionally a man with a civil "A" flying licence arrives, and not long ago one pupil at Grantham brought his own private aeroplane there, but as a rule they know nothing about flying. The instructors have to teach them everything, and turn them out at the end of their year as fully trained officers ready to take their places in squadrons. It is sometimes thought that a R.A.F. officer has nothing to do but fly, and occa-



"SQUAD, LEFT WHEEL" : Officers under instruction on parade passing a captured German anti-aircraft gun. (FLIGHT Photo.)

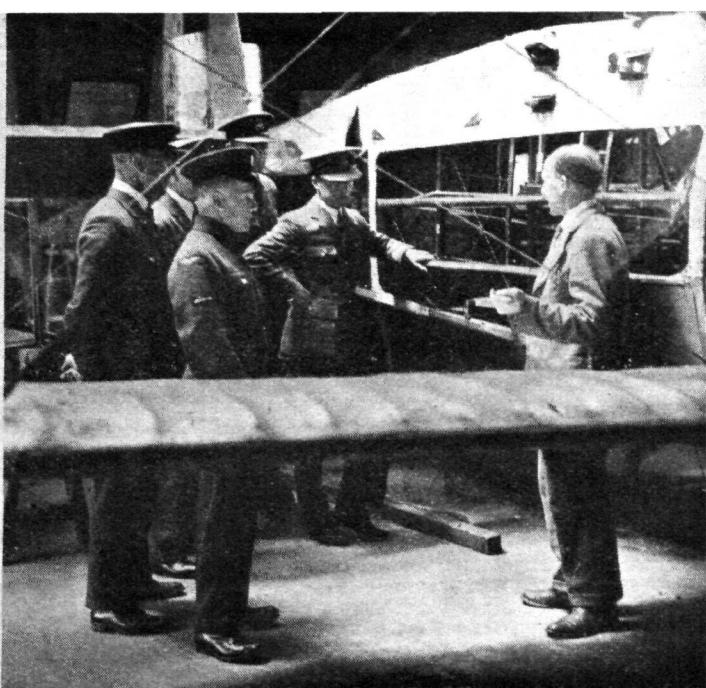


TRAINING TYPES: The machines from top to bottom are "Atlas," "Tutor," "Tiger Moth," "Tomtit" and "Siskin." (FLIGHT Photo.)

sionally critics of R.A.F. organisation have urged that he ought to have nothing to do but to fly. Of course, that is all nonsense. A squadron is an organisation, and it must be kept as a going concern by trained officers who can perform duties on the ground as efficiently as they can perform in the air. They have to learn these duties at the F.T.S.

The establishment of flying instructors at Grantham is 15, and there are ground instructors as well. Of course, there is the Commanding Officer and the adjutant of the School. The present C.O. is Group Capt. C. W. Nutting, O.B.E., D.S.C. Then there is the Chief Flying Instructor (C.F.I.) and the Chief Ground Instructor (C.G.I.), and the other instructors are divided into these two categories. Some of the ground instructors are civilians, as is shown in some of our illustrations. One instructor is specially in charge of navigation. If the pupils spend a busy year

at Grantham, the instructors spend busy year after year there, but they say that it is extremely interesting work. It has been said that a F.T.S. instructor has to combine the qualities of a schoolmaster and of a nurse. It is always fascinating to work on good raw material until one has turned out a finished article, and that is what the men at Grantham do. Consequently one notices in a moment that the whole atmosphere of Grantham is charged with a spirit of "liveness." Everyone is keen, and everyone is evidently enjoying his own keenness. Not the least keen person is the sergeant-major. The representatives of FLIGHT were privileged to witness one example of his hawk-eyed alertness and to hear his voice enforcing law and order at the far end of the station. The only depressed faces seen during our visit were those of a batch of a dozen pupils who were ordered to report at the C.F.I.'s office, and thought that they were to be put on



INSTRUCTION: In the picture on the left the Navigation Instructor is helping a pupil to lay out a course; on the right a civilian instructor is holding a rigging class. (FLIGHT Photo.)



GUNNERY INSTRUCTION : A pupil learning all about machine guns. (FLIGHT Photo.)

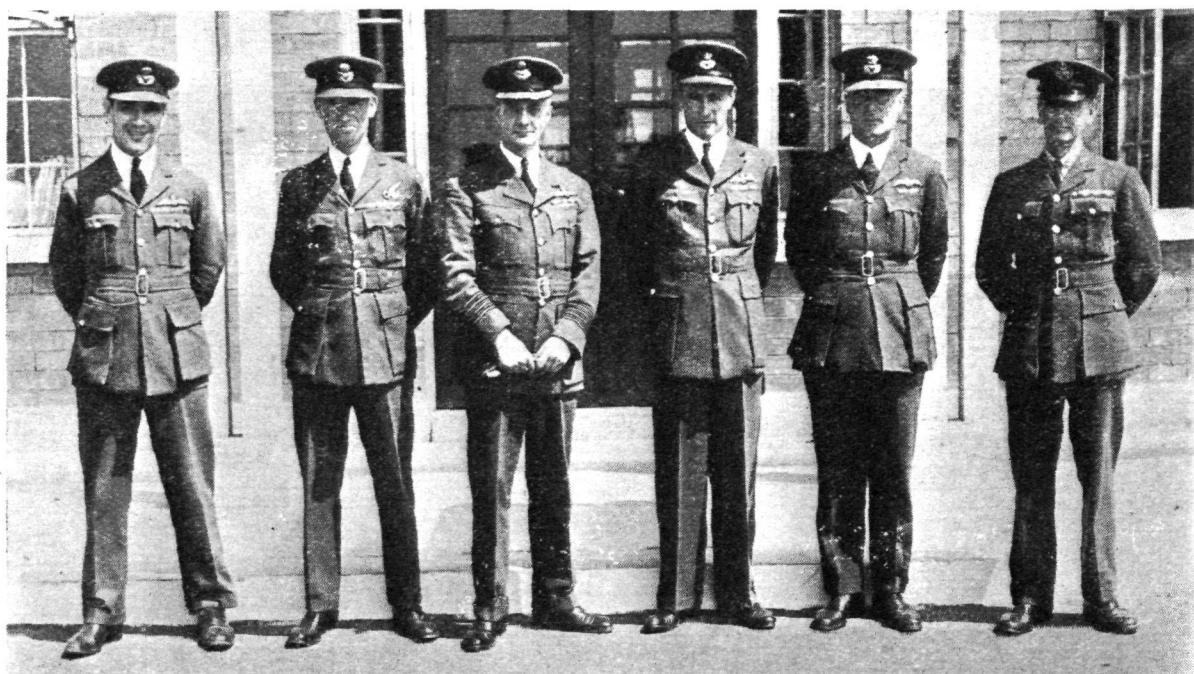
of the Royal Air Force, rigging, signals, and theory of flight. The subject which occupies most time is armament, with air pilotage second, and engines third. In signalling the pupils have to read eight words a minute on the lamp and 10 words a minute on the semaphore. How many of our readers, we wonder, will be able to read the words spelt out by the front rank and by the rear rank in our photograph of the signalling class? We offer no prize for the first three correct answers opened on Thursday morning, and we must regretfully add that readers in Scotland are prohibited from competing.

Flying training is given *ab initio*. Each term is divided into two flights. Each flight com-

mander takes two pupils and each of his assistant instructors takes four pupils. The flying course consists of 22 weeks' instruction in each term. The first term is spent on elementary types, the Avro "Tutor" and (recently) the D.H. "Tiger Moth." Pupils are given a complete training programme on these types, including forced landings, aerobatics, cross-country and instrument flying. This programme must be completed satisfactorily before passing to the senior term. In the senior term it is repeated on the Service types, in addition to tests at the end of the term to enable them to qualify for certificate "B." Standard single-seaters, "Sisks" and "Atlases" at present, are used for solo work. At each period the pupils are practised thoroughly in making forced landings. Three fields not far from the aerodrome are used as landing grounds. The two elementary flights each have the use of one field, while the two Service flights share the use of the third. Towards the end of the junior term a forced landing competition is held, and is run on the lines of an inter-flight competition. The best four pupils from each

The story of Grantham is told pretty well by the photographs which we publish in this article. The day starts with physical training and drill. One picture shows the officers' squad marching off the parade ground past the "Archie," which is a very useful thing for R.A.F. officers to note. Then the pupils have a lecture for 40 minutes, after which half of them go off for flying instruction and the other half have another lecture. The number of subjects on which instruction has to be given is multitudinous. The modern Air Force officer has to be a very accomplished person, and the same applies to the airman pilot. Our illustrations show instruction in rigging, engine fitting, machine gunnery, navigation, and signalling. The subjects on the syllabus are:—Administration, airmanship, air pilotage, armament, drill, engines, law and discipline, meteorology, organisation of the Royal Air Force, history

of the Royal Air Force, rigging, signals, and theory of flight. The subject which occupies most time is armament, with air pilotage second, and engines third. In signalling the pupils have to read eight words a minute on the lamp and 10 words a minute on the semaphore. How many of our readers, we wonder, will be able to read the words spelt out by the front rank and by the rear rank in our photograph of the signalling class? We offer no prize for the first three correct answers opened on Thursday morning, and we must regretfully add that readers in Scotland are prohibited from competing.



THE HEADQUARTERS STAFF : Names (left to right)—Flt. Lt. G. H. Harrison, D.F.C., Flt. Lt. Whitaker, M.B.E., Group Capt. C. W. Nutting, O.B.E., D.S.C., Commanding Officer, Flt. Lt. A. T. S. Leguen de Lacroix (Chief Ground Instructor), Flt. Lt. R. L. Sweeny, W/O. H. J. Gibbs. (FLIGHT Photo.)

PROVED BY ACTUAL PERFORMANCE

Capt. G. de Havilland — winner of the 1933 King's Cup Air Race— writes . . .

ALL LETTERS SHOULD BE ADDRESSED TO THE COMPANY

THE DE HAVILLAND AIRCRAFT CO LTD
 STAG LANE AERODROME · EDGWARE · MIDDLESEX · ENGLAND
 ASSOCIATED COMPANIES IN AUSTRALIA, CANADA, INDIA AND SOUTH AFRICA
 DIRECTORS A.S.BUTLER, Chairman G.de HAVILLAND, C.C.WALKER, F.THEARLE, T.P.MILLS, W.E.NIXON
 TELEPHONE EDGWARE 0171 (8 Lines) TELEGRAMS HAVILLAND, PHONE. EDGWARE. CABLES BENTLEY CODE



July 11th 1933.

GdeH/CMT.

Messrs. The Vacuum Oil Co. Ltd.,
 Carlton House,
 Westminster.
 London. S.W. 1.

Dear Sirs,

I am writing to express my satisfaction
 with your lubricating oil and my thanks for your organisa-
 tion which attended my Leopard Moth during the King's Cup
 Air Race.

Over the course of 830 miles I ran at full
 throttle and at nearly 2,400 r.p.m., and it will interest
 you to know that the oil temperature never exceeded 65°.
 The Gipsy Major engine is running as smoothly
 now as it did before the race.

Yours very truly,

G de Havilland

NOTE:—Capt. de Havilland did not drain his engine throughout the race. The only lubrication attention it received was "topping up" at the end of each round.

— using the **NEW MOBIL OIL AERO "H"**
 VACUUM OIL COMPANY, LTD., LONDON, S.W.1

Save time by using the Air Mail.

FOR MAXIMUM
FLYING AND
LANDING EFFICIENCY
FIT

DUNLOP

AEROPLANE TYRES WHEELS & BRAKE EQUIPMENT
DUNLOP RUBBER COMPANY LIMITED, FORT DUNLOP, BIRMINGHAM. Branches throughout the World
C.F.H.

Hangar Construction •

"THE HANGAR HAS BEEN EXCEPTIONALLY SATISFACTORY IN EVERY WAY.
Your price was reasonable indeed."

So writes Capt. Duncan Davis, A.F.C., Managing Director, Brooklands Aviation Co., Ltd.



Designed by Mr. Graham Dawbarn. Steelwork by Boulton & Paul, Ltd.

As Aircraft Manufacturers and Structural Engineers we claim to possess special knowledge and facilities for the supply and erection of hangars and aerodrome buildings.

BOULTON & PAUL LTD., NORWICH, ENGLAND. London : 139, Queen Victoria St., E.C.4.

Offices at Manchester, Birmingham, Bristol, Newcastle and Johannesburg, S.A.

Phone : Norwich 851 or London Central 4641.

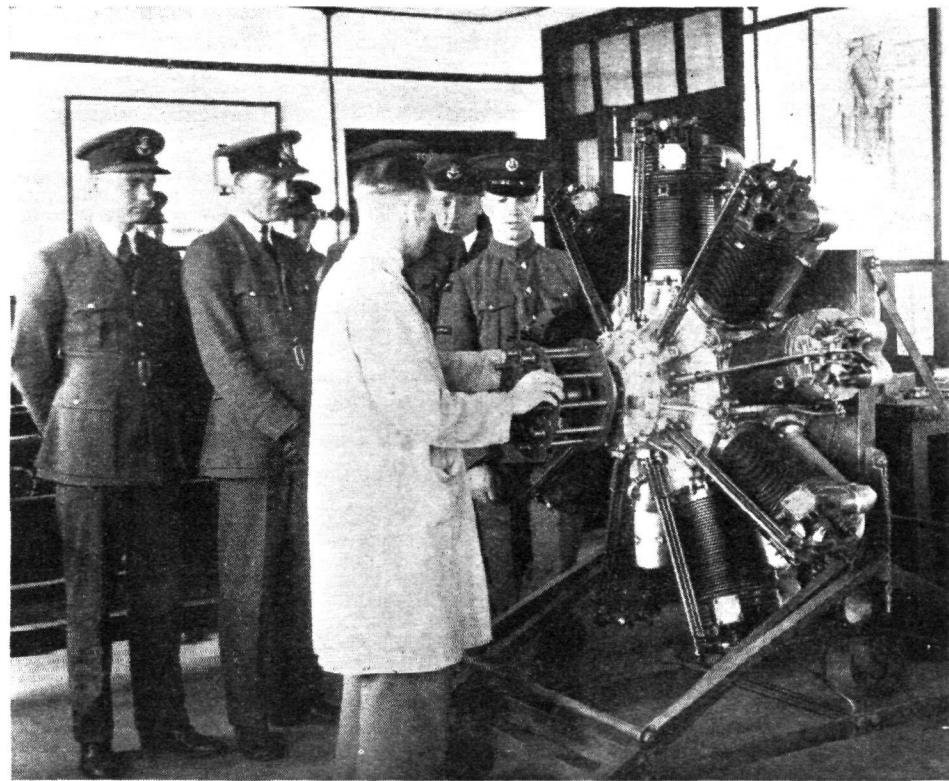
Kindly mention "Flight" when corresponding with advertisers.

THE ENGINE CLASSROOM :
A civilian instructor explaining a
"Jupiter" to a class. (FLIGHT
Photo.)

elementary flight are chosen to compete in the final.

During his year at Grantham, each pupil is required to complete at least four successful cross-country flights to points not less than 60 miles away from the aerodrome. Two of these flights may be made on elementary types, the other two must be made on Service types. One of these flights is always made to Sealand aerodrome, near Chester, the home of No. 5 F.T.S., where the pupil's landing is sure to be made the subject of expert criticism. To arrive late at another F.T.S. and to have to confess that one had lost one's way would be a bitter humiliation for a pupil of Grantham, and we may feel sure that very special trouble is taken in working out the course before starting on that journey. Then, towards the end of the senior term an air pilotage competition is held, teams of six pupils from each of the Service flights competing against each other.

During the year each pupil has to do a minimum of 70 hours' flying, and as a rule this figure exceeds 100 hours, of which at least 20 hours must be on Service types. Before the end of the senior term, each pupil has to pass a number of tests to qualify for Certificate "B" under K.R. and A.C.I. (King's Regulations and Air Council Instructions), Para. 811 (7) (c.). In addition to the four cross-country flights, he must carry out a height test by climbing to 15,000 ft. and staying up there for at least 30 minutes; he must fly successfully in clouds and also in rough weather; he must make four forced landings in fields selected for the purpose; he must be able to carry out aerobatics suitable to the type of aeroplane he is flying; and he must carry a passenger in a Service type machine. All of these tests must be carried out without any assistance of any sort. When these tests and examinations have been passed successfully, the pupil is entitled to wear "wings." He is a fully-fledged pilot. Then he is posted to a squadron, where he begins individual training



in the sort of work which that particular squadron has to do.

No Service in the British Empire has ever been much of a success unless it treats sport seriously. What would a colonel of a cavalry regiment think of a subaltern who was not keen on hunting and polo, or, if in India, pig-sticking? In the Royal Air Force an insistence on sport is particularly necessary, because the work of a pilot is done sitting in a comfortable seat. His arms sometimes get exercised in a heavy machine, but his legs can hardly get tired against the rudder bar. Flying, like driving a car, may make demands on the nervous system, and after a long spell of either a man may well feel actually tired, while at the same time the fresh air has given him an appetite. This is no proper substitute for physical exercise. Besides, in all the Services officers are expected to organise the games of the men. So games form an important part of life at Grantham. There are organised games every Wednesday and Saturday, and on Wednesday the pupils are obliged to play. They are not encouraged to spend much time on individual ploys, which is a very



QUALIFYING FOR "WINGS" : A number of pupils in flying kit. (FLIGHT Photo.)

good thing for men who are to enter one of the fighting Services. Still, every month a pupil gets one short leave, from after duty on Saturday to Sunday night, and one long leave from after duty on Friday to Sunday night. That is a very reasonable allowance. Concentration on his work is very necessary for each pupil, for he has to learn a very great deal in a year. The only question suggested by a visit to a Flying Training School is: should not the course be extended to more than a year? In the time it has Grantham does wonders, and the spirit of the place must remain with the pupils throughout their service. The officers leave the active Service after five years with the squadrons, but the airmen pilots remain on. On receiving their wings they become sergeants, and they retain that rank after their period of flying is over. Even the most crack squadrons in the R.A.F. rank some airmen as among their best pilots. They certainly should be good men if they have passed through No. 3 F.T.S., Grantham.

Royal Air Force Squadrons

Other descriptive articles concerning the work of various R.A.F. Squadrons, etc., have been published in FLIGHT as follow:—

H.M. Aircraft Carrier Glorious. May 16, 1930.

No. 4 (Army Co-operation), South Farnborough; No. 17 (Fighter), Upavon, and No. 33 (Bomber), Eastchurch. June 27, 1930.



Flying Boat Squadrons

Not much is usually heard of the work of our flying boat squadrons, though they always have a very busy summer. The present summer is not yet over, and we hope that many more weeks of fine, sunny weather are still in store for us, but already a very great deal of flying has been done by the F.B. squadrons. Representatives of FLIGHT, wandering the country on their lawful occasions, have met No. 201 F.B. Squadron at moorings in Loch Ryan, off Stranraer, far from their home at Calshot. No. 202 F.B. Squadron from Malta sent five Fairey III F. seaplanes on a Mediterranean cruise, touring the Adriatic and Aegean Seas. Starting on June 13, the flight visited Augusta in Sicily, Corfu, Cattaro and Split, in Yugo-Slavia, back to Corfu, Athens, Mirabella in Crete, Mitylene, and back via Athens, Corfu, and Augusta to Malta, which was reached on June 23. This squadron will shortly return to Great Britain after many years spent at Calafraua, Malta, and on their return they will be re-equipped with flying boats in place of their float seaplanes.

No. 209 F.B. Squadron sent one "Iris V" out from Mount Batten to Malta in June. On July 6 this boat flew,

- No. 601 (County of London) (B.) Sq., A.A.F. (at Lympne). August 15, 1930.
- No. 43 (Fighter) Sq. (Tangmere). September 19, 1930.
- No. 2 (Army Co-operation) Sq. (Manston). December 19, 1930.
- No. 101 (Bomber) Sq. (Andover). April 24, 1931.
- Nos. 204 and 209 (Flying-Boat) Sq. (Mount Batten). June 12, 1931.
- "1890-1912-1931." (An Outline of the Growth of the R.A.F.) June 26, 1931.
- Cambridge University Air Sq. (at Old Sarum). July 10, 1931.
- Central Flying School (Wittering). July 17, 1931.
- Submarine Aircraft Carrier "M 2." July 31, 1931.
- Oxford University Air Sq. (at Eastchurch). August 7, 1931.
- No. 600 (City of London) (Bomber) Sq., A.A.F. (at Tangmere). August 21, 1931.
- No. 605 (County of Warwick) (Bomber) Sq. (Cas. Bromwich). April 1, 1932.
- No. 40 (Bomber) Sq. (Upper Heyford). May 13, 1932.
- Nos. 7 and 58 (Bomber) Sq. (Worthy Down). June 10, 1932.
- A visit to H.M.S. Exeter of 2nd Cruiser Squadron, Home Fleet. June 17, 1932.
- Oxford University Air Sq. (Eastchurch). July 22, 1932.
- Cambridge University Air Sq. (Netheravon). August 5, 1932.
- No. 1 Air Defence Group (A.A.F. and Cadre Sqns.). August 12, 1932.
- No. 100 (Bomber) Sq. (Donibristle). August 19, 1932.
- Scotland's Auxiliaries; No. 602 (City of Glasgow) (Bomber) Sq. and No. 603 (City of Edinburgh) (Bomber) Sq. September 16, 1932.
- London's Auxiliaries; Nos. 600, 601, and 604 B. Sq. October 20, 1932.
- No. 25 (Fighter) Sq. (Hawkinge). December 8, 1932.
- No. 19 (Fighter) Sq. (Duxford). January 5, 1933.
- Aircraft Carrier H.M.S Courageous. January 12, 1933.
- Lee-on-Solent. February 9, 1933.
- No. 23 (Fighter) Squadron. March 2, 1933.
- Gosport. The Fleet Air Arm Base. March 30, 1933.
- Larkhill. R.A.F. Balloon Centre. June 8, 1933.
- The R.A.F. Staff College, Andover. July 20, 1933.
- No. 99 (Bomber) Sq., Upper Heyford. August 3, 1933.
- No. 26 (Army Co-operation) Sq., Catterick. August 10, 1933.

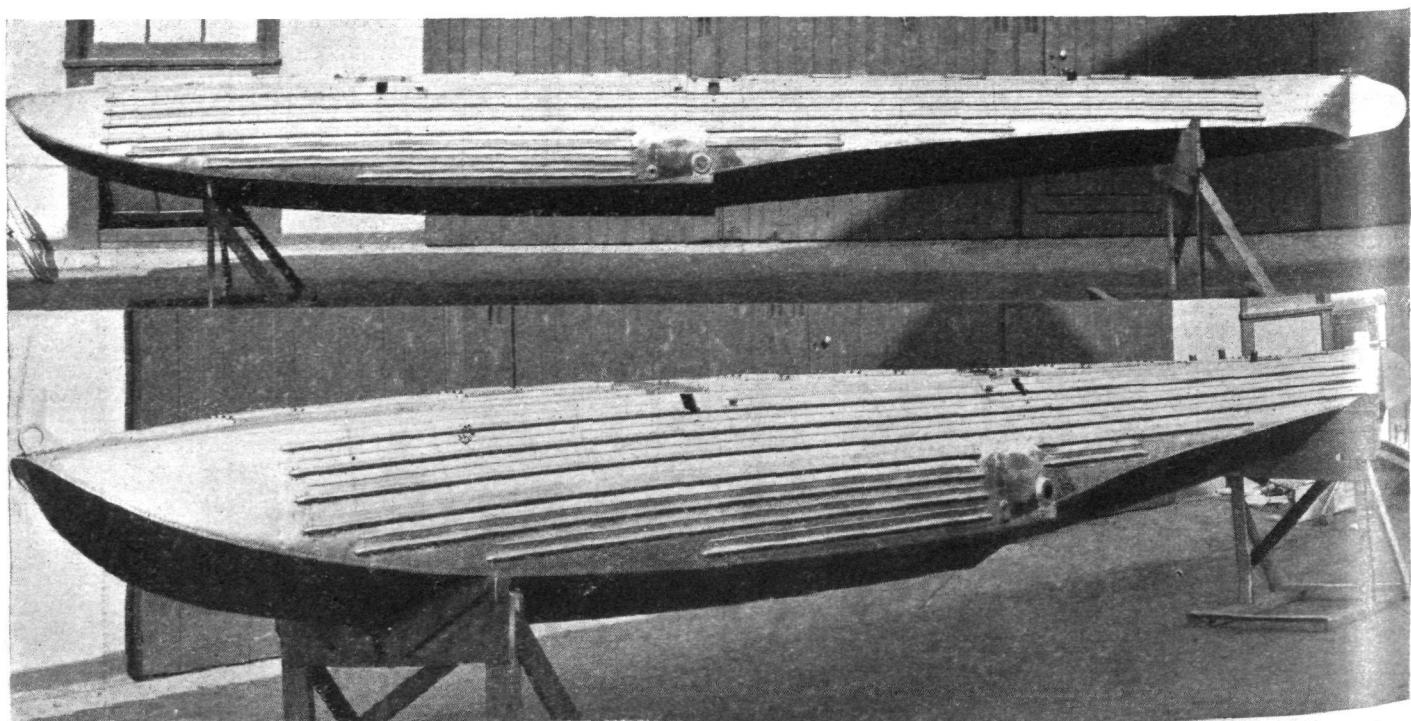


via Sollum and Alexandria, to Lake Yimseh on the Suez Canal. It also contemplated a flight in August to the Western Mediterranean. The rest of No. 209 F.B. Squadron is to be equipped with the "Iris VI" and will then proceed to Malta to relieve No. 202.

No. 205 F.B. Squadron from Singapore sent three "Southampton" on a cruise to Borneo during April and May. They visited Kutchung and Labuan and returned to Singapore on May 13.

The U.S. Carrier "Ranger"

THE new American aircraft carrier *Ranger* is now near completion, and should be in commission by May, 1934. The Navy Department, however, is asking Congress for a further \$2,000,000 to alter the design from "flush deck" to "island." The Chief of the Bureau of Construction and Repair has stated that the "island" type, in which the bridge forms part of a permanent superstructure above the flying deck, is much more efficient for operating the ship than the "flush deck" type, in which a perfectly clear flying deck is provided.



IN STAINLESS STEEL: Two views of one of a pair of seaplane floats which Short Brothers constructed recently to the order of the Air Ministry for experimental purposes. Although made entirely of stainless steel, the floats are not materially heavier than comparable floats built of light alloy, and so far during tests they have given considerable satisfaction. The same firm also has an order to construct a stainless steel float in which joints will be made by the "shot-welding" process, so that the merits of riveting can be tested against those of shot-welding.



R 28

Exide

triumphs again with the
ITALIAN AIR ARMADA

Each of the units of the Italian Air Armada was equipped with an Exide Battery for the radio equipment and lighting. Time and again,

for similar hazardous exploits by men of different nations, the battery chosen for these important functions has been the Exide.

* The Batteries were made under Exide Licence in Italy by Messrs. Magneti Marelli.

Exide BATTERIES for wireless and cars

Exide Batteries are also made in Australia, Canada and the U.S.A.

Obtainable from Exide Service Stations or your usual dealer. There are over 13,000 Exide Service Stations in the world.

Exide Batteries, Exide Works, Clifton Junction, nr. Manchester. Branches: London, Manchester, Birmingham, Bristol, Glasgow, Dublin, Belfast.

Save time by using the Air Mail.



IRVIN

THE PARACHUTE
FAVoured BY
OVER

THIRTY-SIX GOVERNMENTS

ALL IRVIN TYPES ARE APPROVED
BY THE AIR MINISTRY.

Sole Distributors:

SELFRIDGES

HESTON AIR PARK, MIDDLESEX
HAYES 410.

VICKERS'
DURALUMIN
Light
AS
ALUMINIUM.
Strong
AS STEEL.

MANUFACTURED IN
RODS, TUBES,
FORGINGS,
WIRE, STRIP,
SHEETS,
SECTIONS,
STAMPINGS,
etc.

**ALSO "Y" ALLOY, ELEKTRON & WROUGHT
LIGHT ALLOYS TO ANY SPECIFICATION.**

JAMES BOOTH & Company (1915) Limited.

Argyle St. Works, Nethells, BIRMINGHAM, 7.
Telephone: EAST 1221. Telegrams: "BOOTH, BIRMINGHAM".

Over

1,500 Aircraft

are fitted for

BLIND FLYING

with the

Sperry

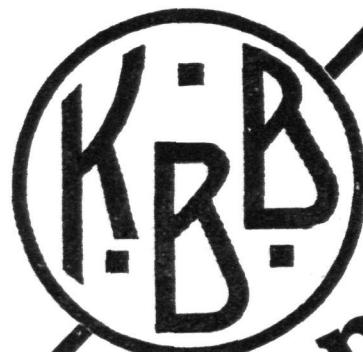
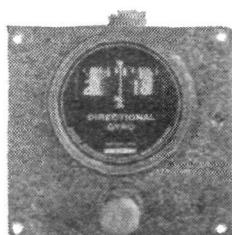
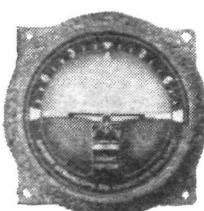
HORIZON

and

DIRECTIONAL GYRO

Full particulars gladly
sent to anyone interested

THE SPERRY GYROSCOPE COMPANY, LTD.
GREAT WEST ROAD, BRENTFORD,
MIDDLESEX, LONDON.



Compasses
for Aircraft

Used in many Record-breaking flights because of their absolute reliability.

Makers of Compasses to the Air Ministry and several Foreign Governments.

Illustrated Booklet on application.

Kelvin, Bottomley & Baird, Ltd.,
Cambridge Street, Glasgow.
Imperial House, 11-15, Air St., Regent Street, London, W. 1.



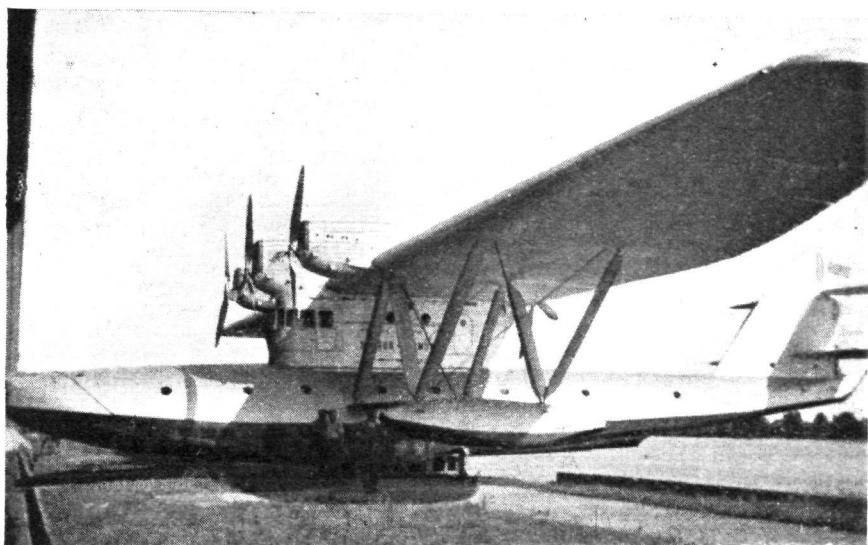
Made in two sizes for
Solo Flying and for
Passenger Planes.

Kindly mention "Flight" when corresponding with advertisers

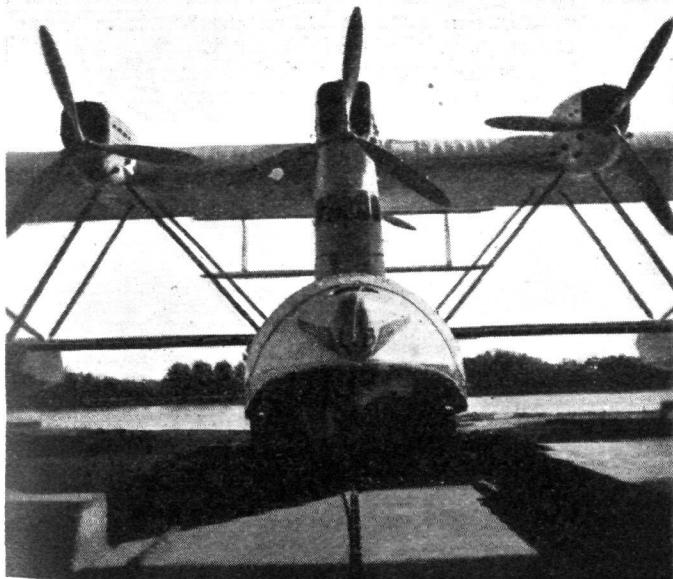
AIR TRANSPORT

THE BLERIOT 5190

AMONG the new French seaplane types built specially with the South Atlantic Aeropostale route in mind is the large Bleriot four-engined flying boat, type 5190, fitted with four Hispano-Suiza engines. This machine has been in course of construction for more than a year, and an illustrated description of it was published in FLIGHT on August 5, 1932. The machine has now been completed, and the first test flights have been made at Caudebec-en-Caux. The pilot was M. Lucien Bossoutrot, Bleriot's chief test pilot, who had with him as passenger M. Zappata, the designer of the machine. The Seine was not found to be by any means an ideal site for testing such a large machine (the wing span is about 140 ft. and width of the river but some 1,000 ft.), but in spite of this M. Bossoutrot got the machine off in 17 seconds at a loaded weight



THE BLERIOT 5190 : The machine on the slipway.



STRUT BRACING: The engines are Hispano-Suiza of 650 h.p.

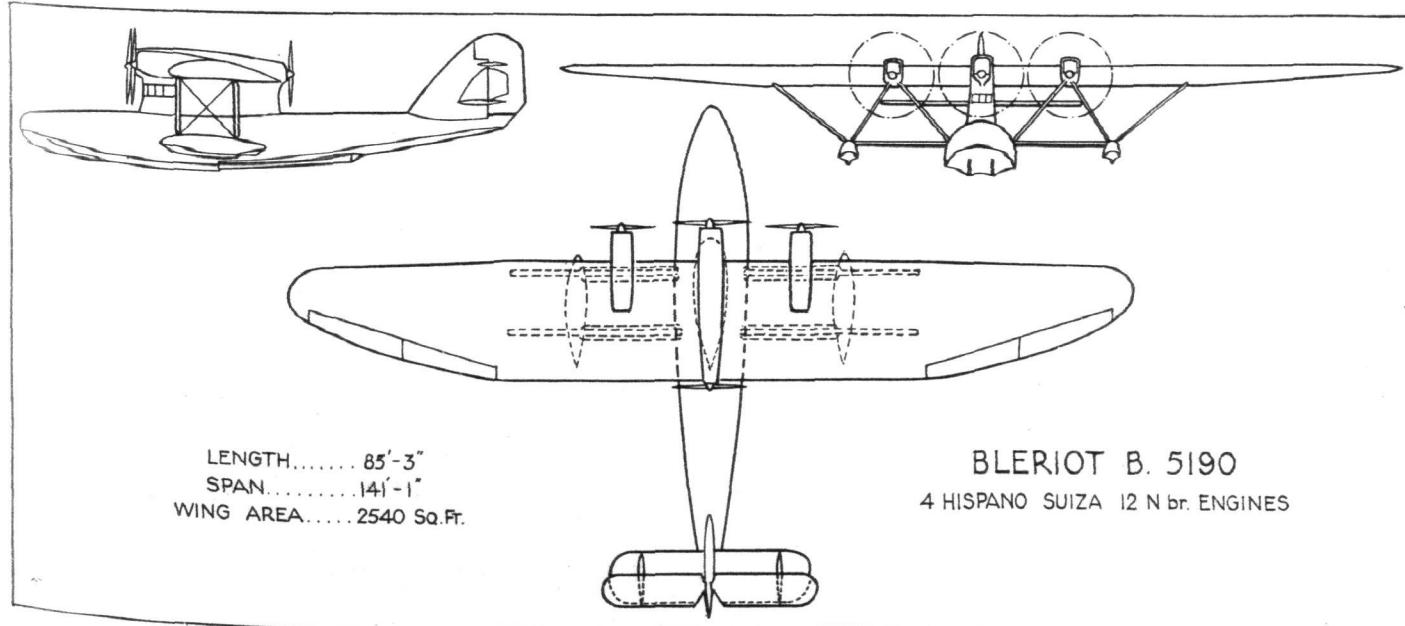
of 16,200 kg. (35,600 lb.). The machine was being flown without the wing tips, which bring the span up to a figure in excess of the width of the hangar. In its finished form the Bleriot 5190 will have a gross weight of 22,000 kg. (48,500 lb.).

The arrangement of the four 650-h.p. Hispano-Suiza engines is unusual. The three engines are placed on the leading edge of the wing, while the fourth, which drives a pusher airscrew, is situated behind the central front engine. During the preliminary tests Bossoutrot did not run his engines at anything like full power, but in spite of this the take-off was quite short. The tests are being continued, and later the machine will be flown to Cherbourg, when the full-load tests will be made.

Aerial Transport in Siam

A VERY live flying company is the Aerial Transport Company of Siam, Ltd., which has just held its second annual general meeting. The operations manager of the company is a Canadian pilot, Mr. R. B. Jackson, and all the rest of the personnel are Siamese. The company operates without a subsidy, and is paid only for the actual weight of mail carried and for the actual distance carried, in which respect it resembles the Tata Air Line in India. Most of the mail work is done by two "Puss Moths" belonging to the company.

The balance sheet and profit and loss account for the year showed that after providing Tcs. 10,750 for deprecia-



tion and reserve for passage money, and writing off the sum of Tcs. 621 from organisation expenses, there remained a profit of Tcs. 1,055, which, added to the profit of Tcs. 3,141 brought forward from last year, made a total Tcs. 4,197 available. It was proposed to carry this amount forward.

The Chairman reported that during the year under review the company maintained bi-weekly air services in the North-Eastern Provinces, serving the towns of Korat, Roi Et, Khon Khaen, Udorn and Nakon Pnom. The traffic for the year was: Mail carried, 11,932 kgs.; goods carried, 2,500 kgs.; passengers carried, 50; total kilometres flown, 114,580; mail trips scheduled, 203; additional trips flown, 14; total completed, 217; total delayed or defaulted, nil; efficiency, 100 per cent.; total number of flights, 783.

There were no forced landings or accidents during the year.

The Tata Air Line

THE Tata Air Line are contemplating extending their service from Madras to Ceylon in the near future, and are at present negotiating with the Governments of Ceylon and India on the subject. One of the difficulties is that there is no aerodrome at Colombo, and there is little prospect of one being made there in the near future. The present idea, therefore, is to extend the service only to Manaar, which is the railhead on the North-West coast of the island, nearest to the mainland of India. As the mail will travel on to Colombo by night train, it will arrive in the capital at much the same time as if it had travelled the whole way by aeroplane. It is expected that this extension of the service to Ceylon will be inaugurated during the coming winter or next spring.

Unfortunately the Tata Air Line have decided to give up the idea of using either seaplanes or amphibians for the sea crossing, on account of the much greater cost of purchase as well as of operation, as compared with the "Puss Moths" which they are using at present.

As regards the existing Karachi-Madras service, the firm have moved their headquarters from Bombay to Poona for the monsoon period, so as to avoid the weekly crossing of the Western Ghats hills during the rainy season. The firm hope to equip their machines with wireless next year, and so avoid a second move to Poona. Up to 10 days ago the service had been able to keep up a 100 per cent. regularity.

The recent establishment of a flat rate for air mails has given the traffic from the South to Karachi a welcome fillip, but this flat rate does not apply to the inward mails

from England. It seems that people in this country will cheerfully pay 6d. to get their letters by air to Karachi. For an extra 2d. they could have them sent on all the way by air, but either they draw the line at this, or else they do not realise the possibility. One reason, however, can be found in the fact that the Imperial Airways machines arrive at Karachi on Fridays, and consequently business letters arrive at Calcutta, Bombay, and Madras at the week-end when offices are closed. Therefore it makes the less difference whether they travel on fast by air or slowly by rail. If and when Imperial Airways cut another day off the eastward run, and reach Karachi on Thursdays, then distribution by air will become of much more benefit to business firms in India.

For Faster Transport

THE Armstrong-Siddeley "Atalanta" type monoplane, which with four Armstrong-Siddeley "Serval" engines has been doing such good work with Imperial Airways on both the Far East and African routes, is now available with four moderately supercharged Armstrong-Siddeley "Jaguar" engines, each of about 450 h.p. With these engines the machine has a top speed at sea level of 160 m.p.h.; a cruising speed of 135 m.p.h.; an initial climb of 1,000 ft. per min.; an absolute ceiling of 19,000 ft., and a service ceiling of 17,000 ft. On any three engines the top speed at sea level becomes 120 m.p.h.; the cruising speed 108 m.p.h.; absolute ceiling 10,500 ft., and service ceiling 8,500 ft. The tare weight is 14,480 lb.; the removable equipment 500 lb.; the W/T. equipment 157 lb.; fuel, 256 gal. giving an endurance of 3 hr. at 135 m.p.h. weighs 1,970 lb., and oil 22 lb. weighs 213 lb. Twenty passengers can be carried weighing 3,300 lb., which with 1,870 lb. of luggage and 510 lb. for a crew of three, makes the total load 5,680 lb., and the total all up weight 23,000 lb.

PORTRUSH, SOUTHSEA AND I.O.W.

The number of passengers carried during week ending August 3 was:—

SPITHEAD AIR FERRY between Ryde and Portsmouth ..	471
SHOREHAM AIR FERRY ..	4
SHANKLIN AIR FERRY ..	27
SHANKLIN AIR FERRY ..	5
SHANKLIN AIR FERRY ..	3

For the week ending August 10 the figures were:—

SPITHEAD AIR FERRY between Ryde and Portsmouth ..	977
SHOREHAM AIR FERRY ..	23
SHOREHAM AIR FERRY ..	8
SHANKLIN AIR FERRY ..	44
SHANKLIN AIR FERRY ..	30



AIRPORT NEWS FROM HESTON

THE Cairo-Alexandria air service operated by Misr Airwork S.A.E., with D.H. "Dragon" aircraft, commenced on August 1, and a regular service to Mersa Matruh, the new Government-sponsored seaside resort, in the ensuing week-end.

On July 25 a number of distinguished visitors were given tea and flights at Almaza Aerodrome, Cairo, and also a fine ten-minute aerobatic display carried out by Mr. Parsons, one of the Misr-Airwork instructors, in a "Moth."

Kashef Effendi, a staff pilot, has recently qualified as an instructor.

Lt. Com. P. H. Baker, R.N., arrived on July 22 from England to take up the position of general manager to the company.

Miss N. Heaton, an American pupil who recently took her "A" licence at Heston on her 17th birthday, is studying inverted flying under Mr. Davy's expert guidance. On August 9 she piloted a friend to the Isle of Wight, and the next day she flew her brother to Scotland.

On Friday the bookings for the Isle of Wight were so heavy that Spartan Air Lines ran three "Cruisers" simul-

taneously on their service. They made the journey in formation. A party of eight Indians, including the Chief of Shalspan, made a week-end return trip to Cowes on this line.

The British Air Navigation Co. carried Mrs. Marshall Field to Paris on Sunday, Gen. Critchley to Vichy on Tuesday, and Capt. Stanley on Saturday to the Lewes races and on to Deauville for the week-end, in addition to the usual routine and press work. In the week ending August 11 this company's aeroplanes have covered a distance of 5,952 miles.

Mr. J. J. Parkes, service manager of Airwork, Ltd., at Heston, piloted the 5A.T. Ford on August 4 to Baldonnel and on to Phoenix Park for the Irish Aero Club meeting. The machine attended the Cork Air Meeting next day, and covered the 275 miles back to Heston in 2 hr. 50 min.

A total of 200 machines cleared Customs at Heston in the month of July. During the week-end of August Bank holiday, from Friday to Tuesday, 47 machines cleared Customs, and of these the records show 18 clearances on Friday alone.

"ROUND THE RIDINGS"

AIR RACE
AT SCARBOROUGH
WON ON

SHELL PETROL

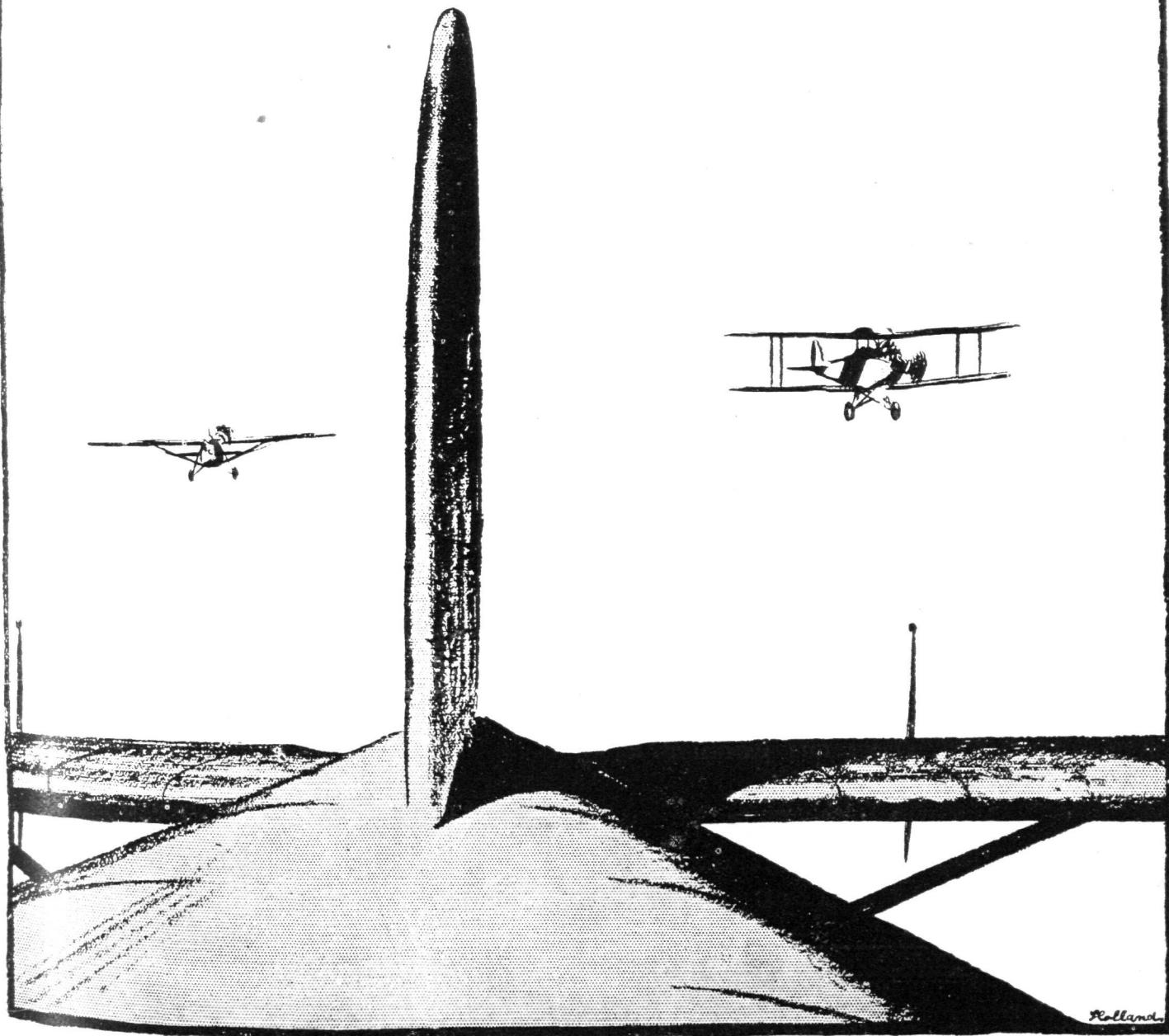
The winner, Mr. C. H. Tutt, was flying a De Havilland Moth Gipsy I, 85 h.p. engine. Shell petrol was also used by the following entrants, who were 2nd, 3rd, and 4th respectively:

Mr. J. R. Micklethwaite, in a De Havilland Moth Gipsy II, 100 h.p.

Mr. E. A. Wynn, in an Avro Avian Cirrus II, 100 h.p.

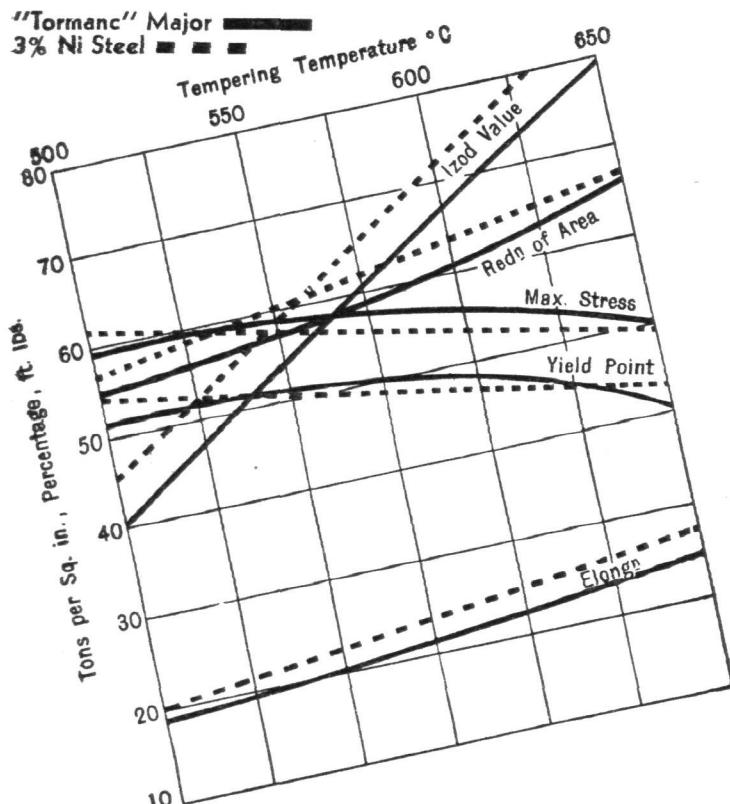
Miss E. D. Tyzack, in a De Havilland Moth Gipsy I, 85 h.p.

(Subject to official confirmation)



Save time by using the Air Mail.

★ The diagram shows the physical properties of "Tormanc" Major, tempered at various temperatures, compared with the corresponding tests of 3% Nickel .30/.35% C Steel.



"TORMANC" MAJOR OIL-HARDENING STEEL REPLACES 3 PER CENT. NICKEL STEEL

An alloy steel recommended for parts requiring tensile strength up to 60 tons per square inch. Easily forged and machined, particularly foolproof in treatment and entirely free from susceptibility to temper-brittleness. As shown by the diagram above, "Tormanc" Major has physical properties almost identical with 3% Nickel Steel—YET ITS RELATIVE COST IS ABOUT 20% LESS.

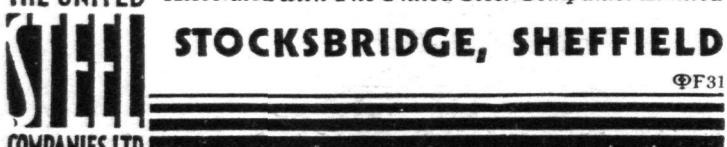
Write for Booklet S.F.133 which contains full details for heat treatment and particulars of physical properties.

SAMUEL FOX & CO. LTD.

THE UNITED Associated with The United Steel Companies Limited

STOCKSBRIDGE, SHEFFIELD

ΦF31



Kindly mention "Flight" when corresponding with advertisers.



Prospective Pupil :

"Is it easier to learn on an Autogiro than on a fixed wing type?"

Pilot Instructor :

"Yes, because the Autogiro in the air practically flies itself, requires no tricky judgment of the approach to land and also can be put down without many hours of learning the art of 'holding-off' in order to make a successful landing."

Prospective Pupil :

"I hear it is safer also . . ."

Pilot Instructor :

"That is very true, the Autogiro cannot stall or spin however faultily it is flown—loss of air speed need not worry the novice."

Prospective Pupil :

"Will it take long to learn by Autogiro?"

Pilot Instructor :

"No, we can teach you quickly, and remember, also, when you go solo our sound instruction combined with Autogiro characteristics will give you absolute confidence."

Prospective Pupil :

"Well, book me for one of your £1 1s. Trial Lessons now!"

A complete "A" licence course. All dual instruction and solo flying for Air Ministry requirements.

£35
No Extras

If you hold an "A" licence we offer you dual instruction and one hour's solo flying for

£5
Inclusive

full particulars from :—

THE CIERVA

AUTOGIRO
BUSH HOUSE, ALDWYCH, LONDON. W.C.2

[Tel: Temp. Bar 2561.]

AERODROME: LONDON AIR PARK, HANWORTH,
MIDDLESEX.

Tel.: Feltham 236.

AIRISMS FROM THE FOUR WINDS

R.A.F. Flight to West Africa

No. 216 (Bomber Transport) Squadron, which is stationed at Heliopolis, has been selected to send a flight to West Africa this autumn. The squadron is equipped with troop-carrying "Victorias," and three of them will be sent on the flight under command of Wing. Com. C. W. Mackey, starting on October 14. In a previous year it was desired to send a flight of "Victorias" to West Africa, but the French authorities were then dubious about landing such large machines on the aerodromes in French Equatorial Africa. This year the squadron will visit the four British Colonies of Nigeria, Gold Coast, Sierra Leone, and Gambia, and the French have also invited the squadron to visit the French Colonies of the Ivory Coast and Senegal. It is expected that a French squadron will also visit these Colonies at the same time.

Grierson's Atlantic Flight

MR. JOHN GRIERSON, who, as was reported in FLIGHT last week, reached Reykjavik, Iceland, on Monday, August 7, is delayed from further progress by engine trouble. On the last stage of his flight a valve of one cylinder stuck and on dismantling his engine Mr. Grierson diagnosed the cause of the trouble as sea water being sprayed up and a salt residue being left in the valve. Mr. Grierson wired the Air Ministry for permission to sign out his own engine, but as his own ground engineer's licence does not cover a "Gipsy" engine, the Air Ministry could not accede to his request, and the machine's certificate of airworthiness must remain invalid until Canada is reached.

Col. Lindberg's Flight

COL. LINDBERG arrived at Angmagssalik, East Greenland, on Saturday, August 12, having flown from Julianehaab. His next stage is on to Reykjavik, Iceland. Owing to the misinterpretation of a wireless message, followed by a breakdown of wireless communication between Denmark and Greenland, a false rumour was prevalent that Col. Lindberg had crashed. There is, of course, no truth in this rumour.

Italian Long-Distance Attempt

THE MARCHESE DE PINEDO is to make an attempt on the Long-Distance record in a Bellanca monoplane, which is reported to have a speed of 140 m.p.h., and a range of 7,500 miles. He will fly from New York with Baghdad as his objective.

French Long-Distance Pilots

MM. CODOS AND ROSSI, who broke the Long-Distance record by flying from New York to Syria, arrived at Marseilles on Thursday, August 10, having flown from Rayak, with a brief stop at Rome. A large and enthusiastic crowd, which included M. Bleriot, welcomed them.

Stratosphere Ascent

M. MAX COSYNS, who was to have attempted an ascent into the stratosphere, has been compelled to postpone his flight. A few days ago certain imperfections were discovered, and on August 10, while work was in progress, the nozzle exploded, killing one workman and injuring others. Apparently there might have been more casualties, but M. Cosyns, foreseeing danger, had advised most people present to withdraw.

Lost Swiss Airman

THE Swiss Government has guaranteed the cost of searching for Herr Carl Nauer, who has been missing since he left Mossamedes, in Portuguese West Africa, on Saturday, August 5. Herr Nauer was attempting to lower Mrs. Mollison's record.

Crash on Cape Flight

MR. CHARLES GARDNER, of Warlingham, Surrey, who left Croydon on Sunday, August 13, crashed at Marignane next day while testing his machine after making a safe arrival. He is now in hospital, suffering from shock. His machine was wrecked.

Third Party Risks

THE question of compulsory insurance against third party risks has now been added to the terms of reference of the Gorell Committee. It is believed that most club and private aircraft are already so insured, and fortunately there have so far been very few cases of injury to third parties. Still, precautions should be taken in good time, and there can be no doubt that such insurance must be made compulsory some day.

The Mollisons' Plans

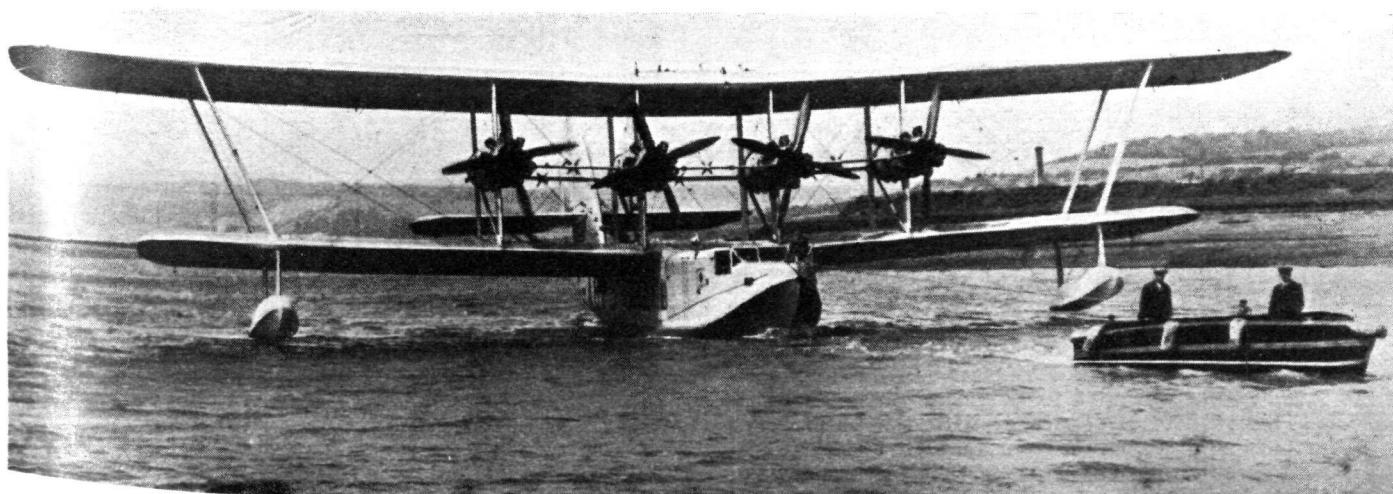
MR. J. MOLLISON is returning to England in the *Majestic*, while Mrs. Mollison is remaining in America. If a new machine can be supplied in time the Mollisons may make an attempt on the long-distance record this autumn.

Egyptian Air Services

AN arrangement has recently been made by which the Italian air service to Bengazi in Cyrenaica will be extended to Alexandria. The Italians intend, it is said, to extend this service to Italian Somaliland. The Cairo aerodrome at Almaza has been provided with lighting equipment for night flying, while Dekheila, the new airport at Alexandria, has recently been completed. The Egyptian Government is considering making other aerodromes at Minieh and Assiut.

"Air France"

AFTER long negotiations the proposed amalgamation of certain French air lines has now become a *fait accompli*, and the new company will be known as "Air France." The companies included in the amalgamation are: Air Union, Air Orient, Aeropostale, the Farman lines and Cidna.



HIGH-SPEED TOWING: A "Power" tender, capable of 33 m.p.h. unladen, towing a Short flying boat of the "Scipio" class.



THE CAPRONI "SAURO-I"

THE Caproni Aeroplane Works have just tested a new light aeroplane, which has been designed chiefly with a view to obtain the highest aerodynamic efficiency and the greatest safety.

The "Sauro" is of mixed construction, of wood and welded tubes of chrome-steel, covered with plywood and fabric. The wing is of the low, full cantilever type, of thick section, tapering towards the tips. The internal structure is assisted by the plywood covering to carry the stresses.

The aeroplane is fitted with a Camber gear, which controls at the same time the position of ailerons and the incidence of the tail plane. Of course, usual controls, totally independent of the Camber gear, are fitted and employed for the usual manœuvres.

The fuselage, of ovoidal section, of well-streamlined shape, is made of chrome-steel welded tubes, covered with plywood and fabric.

The engine, a "Farina T.58" 130 h.p., is fitted in front, on a metal mounting with rubber connections; the

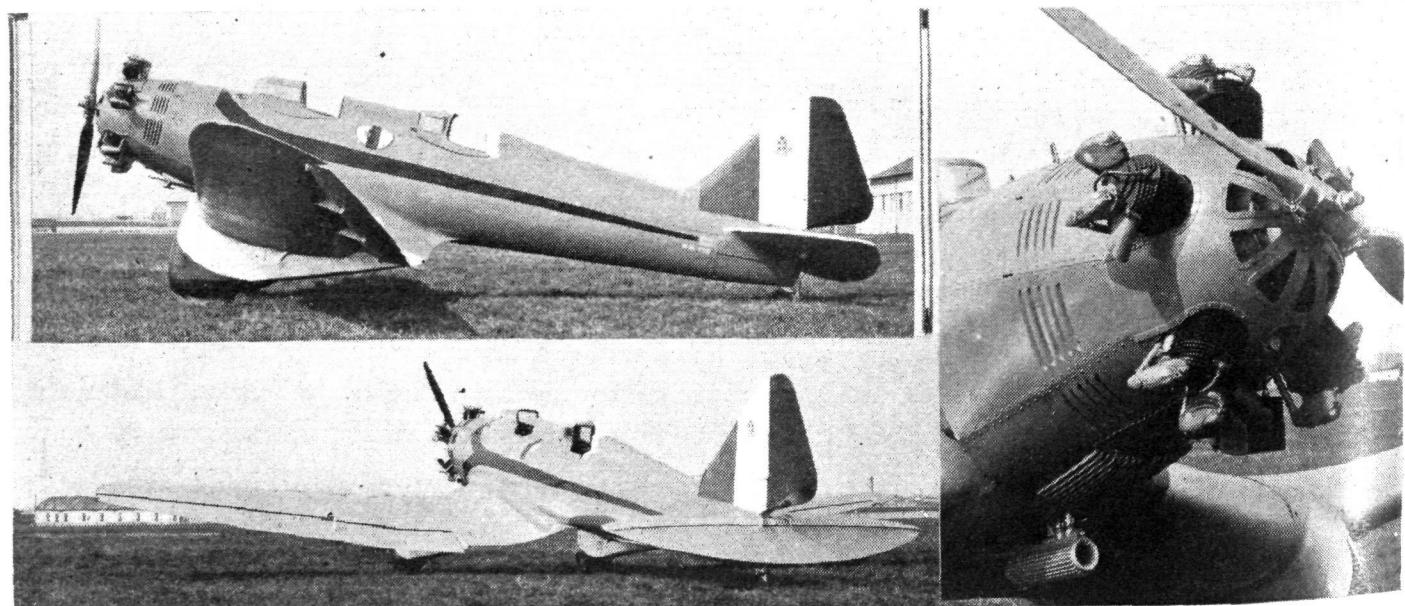
Span .. .	11.40 m.
Length .. .	5.595 m.
Height .. .	2.200 m.
Weight empty ..	480 kg.
Load .. .	260 kg.
Total weight ..	842 kg.
Maximum speed ..	225 km./h.
Range .. .	6 hours
Ceiling .. .	5,000 m.

propeller is of duralumin, two-bladed, with adjustable pitch. Aft of the engine there is a fireproof bulkhead, and then the seat of the passenger and the seat of the pilot, both comfortable and well arranged. A "Salvator" parachute is fitted to the back of each seat, acting as a back cushion. Controls, with lever and pedals, are dual, and the front controls can be disconnected in flight.

The tail unit is of steel, covered with aluminium and fabric; the tail plane is connected, as explained above, with the control of the ailerons, and shifts with them. The tail skid, with rubber springing, is fitted with a steel shoe.

The undercarriage has an extremely wide wheel-track, giving the aeroplane increased safety for landing and ease of manœuvre for taxiing. The wheels, fitted with oleo-rubber shock-absorbers and mechanical brakes, are entirely covered with a streamlined fairing, and the entire group, closely fitted to the wing, offers but small resistance.

C. R.



The Egyptian Flying Corps

It is stated in the Egyptian press that the Egyptian Government intend to ask for one officer and three N.C.O.'s of the R.A.F. to be seconded for service with the Egyptian Army. This request is connected with the purchase of 10 "Avro 626's" recently ordered through Misr-Airwork. It is also stated that the special purpose for which these Avros will be used is to prevent drug smuggling by camel parties. On previous occasions aeroplanes have been used with success to track down drug smugglers.

Not Miss Drinkwater

We have received from Miss Winifred Drinkwater a letter asking us to correct the statement of our Irish correspondent in last week's issue that at the Dublin Air Pageant she "nosed over" an Avro "Cadet." What happened, Miss Drinkwater states, was that she had been flying the machine up till that time, but had handed it over to another pilot for the first lap of the international relay race. We gladly make the correction, and extend our sincere apologies to Miss Drinkwater and to Midland & Scottish Air Ferries, Ltd.

THE ISLE OF MAN RACES

JULY, 1933



THE MANNIN BEG

(Under 1,100 c.c.)

SECOND

M.G. Midget	- - - -	D. K. Mansell
		51·40 m.p.h.

THIRD

M.G. Midget	- - - -	J. L. Ford
		M. Baumer

LAP RECORD

M.G. Magnette	- - - -	H. C. Hamilton
		58·93 m.p.h.

(Subject to Official Confirmation.)

THE CAR WITH THE RACING PEDIGREE

Write for a copy
of No. 2 issue of
The M.G. Magazine

The badge of the



With the exception
of the world-famous
'Magic Midget,' which
has a special chassis
though standard
engine, all M.G.
Racing and Com-
petition successes
have been obtained
with perfectly standard
cars, exactly similar
to the ones you can
buy. Your local dis-
tributor will gladly
arrange a trial run

M.G. Midgets from
£199.10.0

M.G. Magnas from
£285.0.0

M.G. Magnettes from
£360.0.0

Ex Works

TRIPLEX GLASS AND
DUNLOP TYRES

Issued by the Publicity Department of the M.G. Car Company Limited, Abingdon-on-Thames, Berkshire.

Save time by using the Air Mail.

MALLITE AND APPCO PLYWOOD

SPECIAL ATTENTION
TO DECORATIVE CABINS



USED BY THE LEADING AIRCRAFT MANUFACTURERS

THROUGHOUT THE WORLD

MANUFACTURED TO THE BRITISH AIR MINISTRY SPECIFICATION 4.V.3 BY

The AERONAUTICAL & PANEL PLYWOOD CO. LTD., 218-226, Kingsland Rd.,
LONDON, E.2.

RELIABLE FOR
AERO and SEAPLANES



AT LAST SOLO £1 per hour on Moths !

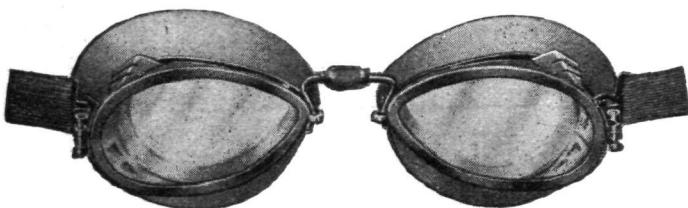
inclusive at Contract Rate (50 hours). The cheapest flying in the world. Only 15 miles from the centre of London.

DUAL £2. Ordinary Solo only £1 5s. 0d. per hour inclusive. Monthly membership £1 1s. 0d. Residential accommodation in the Clubhouse at reasonable terms.

Full particulars from:

The Herts and Essex Aero Club,
Broxbourne Aerodrome, Nazeing, Essex.
Tel.: Hoddesdon 453.

LUXOR GOGGLES



Model No. 10. Price 50/-

FIT EYES, HEAD AND FACE

They are visually correct, air tight; never head tight. They are snug, yet do not bind or cause headaches. They are adjustable.

Complete List on Application.

Look for the new Red rubber cushions with the name Luxor.

Designed and Manufactured exclusively by

E. B. Meyrowitz
LIMITED.

1a, Old Bond Street, or 157, Regent Street,
London, W.1.

"FLIGHT" Photographs (Copyright).

BLACK AND WHITE, GLOSSY, UNMOUNTED:—
 $6\frac{1}{2} \times 4\frac{1}{2}$... 1/6 $8\frac{1}{2} \times 6\frac{1}{2}$... 2/6 10×8 ... 3/6
 12×10 ... 4/6 20×16 ... 10/6

DOUBLE THICKNESS, CREAM BASE, SEPIA TONED, UNMOUNTED:—

10×8 ... 6/- 12×10 ... 7/6 20×16 ... 21/-

HAND COLOURED, IN OILS (GREY MOUNT):—
 20×15 (MOUNT 24×19) ... 31/6

FLIGHT Office, 36, Great Queen Street,
Kingsway, London, W.C.2.

Holborn 3211 and 1884.

Approved by the
Air Ministry!

G.



Q.

PARACHUTES

PRICES FROM £30

The G.Q. PARACHUTE CO
50 GRESHAM ST LONDON, E. C.2.
Telephone: MET. 0967

WORKS.

17 STOKE RD GUILDFORD, SURREY, TEL. GUILDFORD 1289

Kindly mention "Flight" when corresponding with advertisers.

BOOK REVIEWS

"The Modern Diesel," a Review of high-speed Compression-ignition Engines for Road Transport, Aircraft and Marine Work. Published by Iliffe & Sons, Ltd. Obtainable from FLIGHT Office. Price 3s. 9d., post free.

THE second edition of this book is an improvement on the first in that an opportunity has been taken to supplement the particulars and illustrations with those relating to the latest types. The 194 pages of the book contain 130 illustrations, and the whole subject of the working of the Diesel type of engine is dealt with in a manner which is equally far removed from the "popular" and the "high-brow." The result is that the book can be read and understood by almost anyone, certainly by any reader with a slight knowledge of the principles of ordinary car-type petrol engines. At the same time, even those who can claim more than an elementary knowledge of the working principles of the compression-ignition engine will find this book worth buying, as it gives particulars of a considerable number of engines as used in road and marine transport, and of several compression-ignition aero engines.

The book begins with a brief historical review, giving the origin of the compression-ignition engine, and gives an account of the two "schools" of design, Diesel and Akroyd-Stuart. The fundamental principles of operation are described, and explained by simple diagrams, and the importance of the fuel injection pump is well brought out.

Of greatest interest to FLIGHT readers may be assumed to be the section which deals with compression-ignition aero engines. The types described and illustrated include the Beardmore "Tornado" and flat horizontal 12-cylinder engines, the Bristol "Phoenix," the Clerget 9- and 14-cylinder engines, the Fiat, the Junker "Jumo IV" and "Jumo V" (the latter somewhat incompletely), the Maybach, the Packard and the Rolls-Royce "Condor."

"Airsense," by W. O. Manning (Sir Isaac Pitman & Sons, Ltd.). Obtainable from FLIGHT Office. Price 3s. 10d. post free.

MR. MANNING, well known as one of our early designers, has produced a book for which many people have been waiting. It is just the sort of volume which we all want when we are asked the why and wherefore of flying by the younger generation, and, indeed, even by those of more mature years who are for the first time taking an interest in flying and want to get a clear idea of what an aeroplane is and how it works.

The language is clear, concise and simple, and the meaning is therefore plain to everyone, but—and this seems a rather big "but"—it would have greatly enhanced the value of the work if there had been included in it a larger number of diagrams and illustrations. Words, however well and correctly used, cannot make any semi-technical description as clear alone as when they are accompanied by a diagram. No doubt questions of cost have been responsible for this paucity of illustrative matter, but there is a definite danger that Mr. Manning (for his publishers) have been "penny wise and pound foolish." However, in spite of this, no one will feel that they have anything but good value for their money. Apart from actual aeroplanes and flying, there are six chapters devoted to explanation of the petrol engine and how it works, also very valuable for "explanatory" purposes. In a chapter on "Wings that Rotate or Flap" Mr. Manning has, perhaps, not brought out the great advantages already obtainable with that type of flying machine as much as he might have done; he has rather stressed the limitations. Incidentally, "Autogiro" is the name of Señor de la Cierva's flying machine, not *autogyro*. It is to be hoped that those innumerable people who write to FLIGHT asking "how and why" will in future save us a great deal of work by first getting a copy of this book.



TWO FRENCH MEETINGS

A *Rallye International* has been organised by the Vichy Aero Club to take place during the forthcoming week-end. Only those who arrive between 3 p.m. and 5 p.m. on Saturday, August 19, will be regarded as taking part. The programme which has been arranged—only those pilots who sent in application forms before August 10 will be guests of the Club—includes an Air Meeting on the Sunday, at which M. Pierre Cot, the Minister for Air, will preside. In the evening there will be a Grand Banquet given by the town of Vichy and the Aero Club.

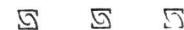
Visitors will depart on the Monday. Customs will have to be cleared at a recognised customs aerodrome as no facilities exist at Vichy. Hangar accommodation cannot be guaranteed, and visitors are advised to bring their own pickets and cockpit covers. Those who are guests of the Club will receive, besides hospitality, a contribution towards their travelling expenses.



The French Air Transport Merger

ACCORDING to *The Times* Paris correspondent the liquidation of the Aéropostale Company has been completed by the sale of the company with all its assets, including its organisation, aircraft, ships, contracts, and aerodromes in France, Africa, the Cape Verde Islands, and South America, to the new company which was recently formed under the auspices of the Air Ministry to acquire all the existing air lines. The price is 77,000,000 f. (£616,000 gold), to be paid in 15 equal instalments, beginning on August 1, 1934. The transaction was finally approved at a meeting of shareholders of whom 16,000 were represented. It was found that the liquid assets of the Aéropostale Company were 65,000,000 f., which, together with a credit on the State of 60,000,000 f., will make about 36 per cent. available for the shareholders in the next three months, rising to 65 per cent. as the instalments of the purchase money are paid. There was no discussion

Bienvenue Aérienne is the title given by the organisers, whose address is 6, Rue Galilee, Paris, to aerial week, intended to be a return for hospitality shown French aviators abroad on many occasions. It is planned to take place during the week September 17-24, and will be in the form of a leisurely tour, with plenty of time for the social side. On September 17 visitors are asked to arrive at Rheims about 3 p.m. On September 18 they will fly to Orly, on September 19 to Buc, on September 20 to Lyons and Cannes, and on September 24 visitors will return from Cannes to their respective homes. On the arrival at Rheims visitors will be given tickets which entitle them to free hotel accommodation and petrol. British flying folk are asked to write as soon as possible to the address given above, stating the names and number of occupants in the machine, the registration letters, and the make and power of the engine.



at the meeting, and 13,224 votes, representing about 170,000,000 f. of capital, were given for the sale.

All the pilots of the Air Union and the other French air lines will be "pooled" when these companies are amalgamated on September 1, so that every one of them will eventually be competent to fly any liner on any route now served by the constituent concerns of the new combine. In order to become thoroughly conversant with all the details of the different services at present undertaken by Aéropostale, Air Orient, Cidna and Air Union, individual pilots, all of whom are fully-trained navigators and have several thousands of hours flying experience, will work in company with a colleague who is already familiar with the routes and conditions of the services concerned. Thus, a cross-Channel navigator will work with and under a pilot who has had long experience of the far-eastern route on a plane travelling to India, and vice versa. In this way, every pilot will in time be able at a moment's notice to take control of any plane of the amalgamated services.



Otterburn Hall, Otterburn, Yorkshire. (FLIGHT Photo.)

Ports of Call

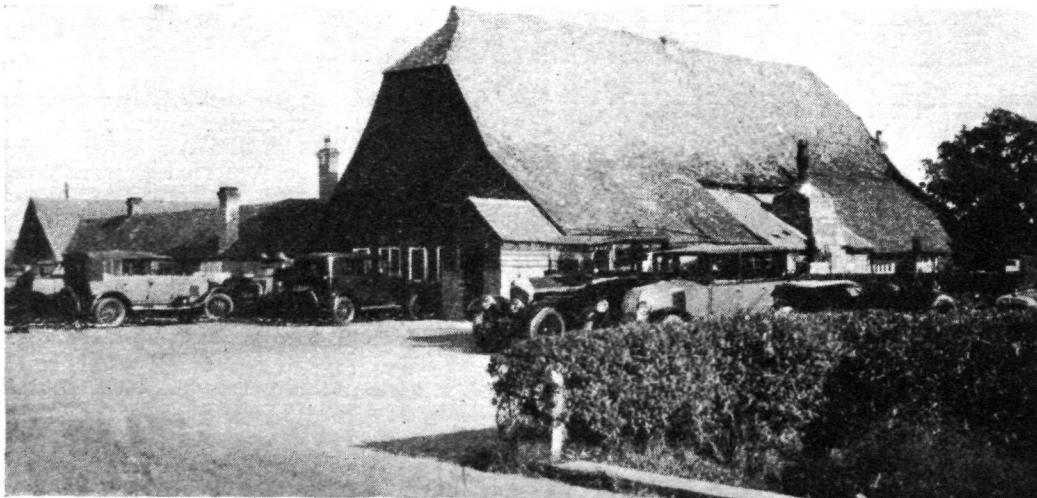
YOU can call for port at any decent hotel, but if you are flying you have to choose an hotel with a landing ground before you can get down to do your calling.

The number of enlightened hotels which are providing for the flying man is growing, albeit not as fast as we should like to see it. However, there are sufficient now to provide welcome stops when flying on almost any of the main routes across England. Sometimes, when talking to hotel proprietors, we have had it said to us that they could not provide facilities because they could not stand the cost of providing hangars, and similar equipment. We would like to stress the fact that, generally speaking, things like hangars are luxuries, the cost of which it is quite unnecessary to incur at this stage in the development of facilities. What is wanted is a landing ground as close to the hotel as possible and some provision for getting fuel and oil. A body which has done more to assist this development than perhaps anyone else, is the aviation department of the Automobile Association. Mr. I. McClure, who directs its destinies so ably, has probably inspected more sites of this nature than anyone else, and those who fly are in his debt for the A.A.

register of landing grounds, a register which forms an admirable companion to the Air Ministry "Air Pilot."

We have from time to time illustrated landing grounds attached to hotels. Among the more recent of these are those at the Newton House Hotel, Londonderry; Leeming Bar, situated on the Great North Road; Great Fosters, at Egham; and the Coombe House Hotel, near Shaftesbury. This week we are able to illustrate two further such places. The first is Otterburn Hall, which lies about 25 miles approximately N.W. of Newcastle, and the second the Old Barn Teahouse, Hildenborough, Kent. It is of interest, both modern and ancient. Its proprietor is exceedingly original and has converted the farm buildings and the barn in a manner which never fails to draw exclamations of appreciation from those who visit them.

It was to the former that a race was run last Sunday after the meeting at Newcastle. Last year a similar race was run for a cup presented by Mr. F. R. Walker, who is now happily on the way to recovery after his accident during the King's Cup Race. This year the same cup was competed for in the Otterburn Race. The handicapping and general organisation were in the hands of Mr. Ivor McClure. Mr. C. H. L. Tutt came in first with a "Moth" ("Gipsy I"), Mr. J. D. Irving second, also in a "Moth" ("Gipsy I"), and Flt. Lt. G. H. Stainforth third in a Comper "Swift" (Pobjoy).



The Old Barn Teahouse, Stocks Green Farm, Hildenborough, Kent.

THE ROYAL AIR FORCE

London Gazette, August 8, 1933.

General Duties Branch

Lt. Com. R. R. Graham, R.N., is re-attached to R.A.F. as a Sqdn. Ldr. with effect from July 28 and with seny. of July 1. The follg. Pilot Officers are promoted to rank of Flying Officer:—J. C. Sisson (April 9); G. W. Heather (July 9); G. W. Montagu (July 11); W. R. Cox, A. W. Sweeney (July 28).

Flt. Lt. P. R. Barwell is placed on half-pay list, Scale B, from Aug. 5 to Aug. 8 inclusive. Air Commodore P. F. M. Fellowes, D.S.O., is placed on retired list (July 17); Sqdn. Ldr. T. F. Bullen, O.B.E., is placed on retired list (Aug. 8); Flt. Lt. J. R. Brown, D.F.C., is transferred to Reserve, Class A (Aug. 4); F/O. A. D. Bennett is transferred to Reserve, Class A (June 24, 1932). (Substituted for *Gazette*, June 28, 1932); F/O. P. W. A. Dudgeon resigns his permanent commn. (July 18); Lt. J. Brett, R.N., Flt. Lt., R.A.F., relinquishes his temp. commn. on return to Naval Duty (Aug. 9); F/O. the Hon. F. D. H. Lea Smith relinquishes his short service commn. on account of ill-health (Aug. 2).

Accountant Branch

Flt. Lt. F. C. Langley is placed on retired list at his own request (July 26).

Medical Branch

The follg. Flying Officers are promoted to rank of Flt. Lt. (Aug. 5):—P. H. Peterson, M.D., M.C.P., and S.; R. K. Muir, M.D., C.M.

Flt. Lt. E. W. B. Griffiths, M.B., Ch.B., is transferred to Reserve, Class D.2 (Aug. 5).

PRINCESS MARY'S ROYAL AIR FORCE NURSING SERVICE

Sister Miss D. France is placed on retired list at her own request (Aug. 8).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Wing Commanders: J. B. Cole-Hamilton, to No. 1 Air Defence Group H.Q., 1.8.33, for Air Staff duties, vice Wing Commander A. H. Orlebar, A.F.C. E. B. Rice, to Station H.Q., Ramle, 1.7.33, to command.

Squadron Leader: R. F. S. Leslie, D.S.C., D.F.C., A.F.C., to No. 21 Group H.Q., West Drayton, 28.7.33, for Personnel Staff duties, vice Sqdn. Leader G. G. A. Williams.

Flight Lieutenants: C. E. Barracough, to Air Ministry Dept. of C.A.S. (D.O.I.), 1.8.33. W. T. Holmes, to No. 43 (F.) Squadron, Tangmere, 31.7.33. F. Woolley, O.B.E., D.F.C., to R.A.F. Base, Gosport, 2.8.33.

Flight Lieutenants: P. R. Barwell, to H.Q. Iraq Command, Hinaidi, 1.6.33. A. P. Bett, to No. 14 (B) Sqdn., Palestine, 18.7.33.

Flying Officer: T. King, to No. 25 Squadron, Hawkinge, 3.8.33.



Re-equipment of R.A.F. Units

THE Air Ministry announces that the following re-equipment of units has recently taken place:—

Units.	Details.
No. 2 (A.C.) Sqdn.	"Audax" replacing "Atlas."
No. 26 (A.C.) Sqdn.	"Audax" replacing "Atlas."
No. 25 (F) Sqdn.	"Hart T" replacing "Siskin III" (dual control).
No. 43 (F) Sqdn.	"Hart T" replacing "Siskin III" (dual control).
No. 820 Sqdn. (late 445 and 446 Flights)	"Seal" replacing IIIF F.A.A.
No. 3 Flying Training School.. ..	"Tutor" (Lynx) replacing "Tiger Moth."
Central Flying School	"Tutor" (Lynx) replacing 504N.
Base Training Sqdn., Gosport ..	"Tutor" (Lynx) replacing "Tutor" (Mongoose).
Base Training Sqdn., Calshot, "B" Flight	"Cloud" replacing "Southampton."
The following units have recently completed part replacement:—	
Base Training Sqdn., Gosport, "B" Flight	3 "Seal" replacing 3 IIIF's.
Base Training Sqdn., Leuchars ..	3 "Seal" replacing 3 IIIF's.
R.A.F. College, Cranwell ..	4 "Hart T" replacing 4 "Atlas T."
Air Gunnery School ..	4 "Hart" replacing 1 "Wapiti."
The following units are expected to complete replacement as indicated, during the next few months:—	
No. 99 (B) Sqdn.	"Heyford" replacing "Hinaidi."
No. 810 Sqdn.	6 "Ripon" replacing 6 "Dart."
No. 5 Flying Training School ..	"Tutor" replacing 504N.
Base Training Sqdn., Gosport, "C" Flight	2 "Seal" replacing 2 IIIF's.

Ground Engineers' Licence Examinations

EXAMINATION Boards will sit for the purpose of examining applicants for ground engineers' licences at the following places and times:—

- (a) London, weekly, on each Tuesday in September, October, November and December, 1933 (December 26 excepted).
- (b) Croydon, on the second Friday in September, October, November and December, 1933.
- (c) Manchester, on the first Friday in November, 1933.
- (d) Bristol, on the first Friday in October, 1933.
- (e) Glasgow, on the third Thursday in October, 1933.



ROYAL AIR FORCE RESERVE RESERVE OF AIR FORCE OFFICERS

General Duties Branch

E. J. Dease, Lt., The Rifle Brigade, R.A.R.O., is granted a commn. as Flying Officer on probation in Class A (July 29); F/O. P. W. A. Dudgeon is granted a commn. in this rank in Class C on resignation of his permanent commn. in R.A.F. (July 18). The follg. Pilot Officers on probation are confirmed in rank:—H. G. Goddard, S. G. Birch, B. E. Knight (July 4); J. A. Tinne (July 5); M. L. Docker, J. K. Rotherham (July 11); E. F. Tyler (July 13); M. M. Carter (July 18); K. H. Higson (July 25).

The follg. Flight Lts. are transferred from Class A to Class C:—S. L. H. Potter (July 14); S. C. Harker (July 27); H. R. B. Howell (Aug. 2).

The follg. Flying Officers are transferred from Class A to Class C:—F. T. K. Bullmore (Dec. 20, 1932); S. F. Woods (July 13); C. A. C. Patton (July 19); H. A. Denny (July 20).

SPECIAL RESERVE

General Duties Branch

T. R. Vickers is granted a commn. as Pilot Officer on probation (Aug. 4).

AUXILIARY AIR FORCE

General Duties Branch

No. 605 (COUNTY OF WARWICK) (BOMBER) SQUADRON.—M. T. Avent is granted a commn. as Pilot Officer (July 29).

No. 608 (NORTH RIDING) (BOMBER) SQUADRON.—P. D. O. Vaux is granted a commn. as Pilot Officer (July 20).

Stores Branch

Squadron Leader: W. A. Glasper, to H.Q. Iraq Command, Hinaidi, 1.6.33, for Equipment (Stores) Staff duties.

Flight Lieutenant: C. E. Tidy, to Station H.Q., Biggin Hill, 1.8.33.

Flying Officers: J. R. Fraser, to No. 1 Stores Depot, Kidbrooke, 1.8.33; A. E. Harbot, M.B.E., and R. A. Howes, M.B.E., to Home Aircraft Depot, Henlow, 3.8.33. H. W. C. Springham, to Station H.Q., Hawkinge, 3.8.33.

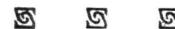
Accountant Branch

Flight Lieutenant: M. H. Luker, to Aeroplane and Armament Experimental Estabt., Martlesham Heath, 31.7.33.

NAVAL APPOINTMENTS

The following appointment has been made by the Admiralty:—

Lieut. (F/O), R.A.F.: C. A. Kingsley-Rowe, to *Victory*, for R.A.F. Base, Gosport (August 9), and to *Courageous* (August 16).



Applications for licences should be made on C.A. Form 2B, which is obtainable on request, and should be addressed to The Secretary, Air Ministry (C.A.2), Adastral House, Kingsway, London, W.C.2. Applications for extensions to existing licences will also be dealt with at these boards, and such applications should be made on C.A. Form 2D to the above address. When forwarding the application, the applicant should indicate the provincial centre which he wishes to attend for examination, if he is unable to take the examination in London.

Kite Flying near Folkestone

DURING the next week a kite may be flown by day up to an altitude of 1,000 ft. from a position on the cliff top 3 miles E.N.E. of Folkestone, Latitude 51° 06' N., Longitude 1° 14' E.

The mooring cable of the kite will be marked in the standard manner.



Air Ambulances

THE British Red Cross Society have prepared a scheme for the organisation of air ambulance detachments, which has the approval of the Air Ministry. At full strength each detachment will consist of a commandant, two mechanics, and one clerk. The commandant must hold a "B" licence and a second-class navigator's licence. Every member of the air ambulance detachment must be trained to give first aid and to load stretcher cases into and out of machines. Detachments have already been formed by the Surrey and East Lancashire branches of the Society, both of which operate with Desoutter monoplanes.

Rochester Airport

ROCHESTER City Council have decided to expend £30,000 on acquiring land to be used as a municipal airport.

Parachute Record

On the afternoon of Sunday, August 13, Herr Bohlen, a Swiss parachutist, jumped out of a machine from a height of 25,000 ft. and landed safely. He claims a world record.

BRIEFLY

Mr. F. R. Walker, who met with an unfortunate accident in the King's Cup Race, has now so far recovered that he took his first walk out of doors on Monday last. Characteristically he spent the following day at Heston and expressed his desire to start flying again.

Capt. C. W. Snook, of Air Taxis, Ltd., Western Australia, who has been on a visit to this country finding suitable equipment for Australian flying enterprises, left for Perth by sea on August 19.

British Salmson Aero Engines, Ltd., of Raynes Park, are adding motor-cars to the productions of their factory. The first type will be a 12-h.p. four-cylinder job which is an improvement on the existing and somewhat smaller French-built car. It will be produced with three different bodies; a four-door saloon, a two-door coupé, and an open sports tourer. Its 1,500-c.c. O.H.V. engine is said to give it very fine performance indeed.

Mr. Hubert Scott Paine left Southampton with his racing motor boat, *Miss Britain III* (Napier "Lion" engine), in the *Empress of Britain* on Sunday, August 13.

Exide Batteries, type 5/XCM/9, manufactured in Italy by Magneti Marelli, were used by all the seaplanes of the flight which, under command of Signor Balbo, recently flew to America and back from Rome.

A. Arnold & Co., of 122, St. John Street, London, E.C.1, are now marketing a stop watch which should be very suitable for those who want to time air races. It reads to one-fifth of a second, and only costs 10s. 6d.

Wild-Barfield Electric Furnaces, Ltd., and G.W.B. Electric Furnaces will be shown at the Shipping, Engineering and Machinery Exhibition being held at Olympia in September.

"Aluminising," a process of spraying aluminium patented by Metallisation, Ltd., of Pear Tree Lane, Dudley, is being used for preventing the corrosion of exhaust pipes on aircraft. The method is fully described in a booklet which can be obtained from the company by those who write mentioning FLIGHT.

Scintilla magnetos were used by Codos and Rossi in their recent record breaking flight. Throughout the whole of the 5,630 miles the ignition installation of their Hispano-Suiza engine functioned perfectly.

Gen. Julio Valle, the Chief of the Italian Naval Air Staff, was seriously injured when his seaplane crashed into the sea near Valencia. He and six other occupants of the machine were taken to hospital.

Five American naval airmen were killed in a crash in Honolulu on Wednesday, August 9.



"BRISTOLIANS" KEEP COOL : Sir G. Stanley White, Bart., Managing Director of the Bristol Aeroplane Co., Ltd., and Mr. A. H. R. Fedden, the designer of the famous Bristol engines, at a recent motor-boat race on the Avon. Sir Stanley's son was competing for the Roy Fedden Trophy, and finished second.

Flying in South-West India

STEPS are being taken to improve the landing ground at Quilon (in the Indian State of Travancore, on the Malabar coast of South India), and the question of officially declaring it fit for landing of aeroplanes is under consideration of the State Government.

F/O. Mason, of the Madras Flying Club, is on a visit to Quilon in this connection, and he and the Chief Engineer, Mr. Westerdale, are inspecting the landing ground.

Mr. Mason will also visit Trivandrum, the capital of the State, and it is likely that he will inspect suitable sites for landing grounds.



IMPORTS AND EXPORTS

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910).

For 1910 and 1911 figures see FLIGHT for January 25, 1912.

For 1912 and 1913, see FLIGHT for January 17, 1914.

For 1914, see FLIGHT for January 15, 1915, and so on, yearly, the figures for 1932 being given in FLIGHT, January 19, 1933.

	Imports		Exports		Re-exports	
	1932.	1933.	1932.	1933.	1932.	1933.
Jan. . .	£ 2,456	£ 2,073	£ 122,942	£ 82,963	£ 863	£ 827
Feb. . .	2,503	9,866	181,482	79,357	90	3,050
Mar. . .	1,946	3,760	167,195	126,008	200	821
April. . .	622	2,236	142,145	121,030	1,128	94
May. . .	1,747	232	138,356	149,214	5	—
June. . .	398	1,021	126,330	137,186	125	2,037
July. . .	1,070	4,806	142,702	75,634	120	2,520
	10,742	24,019	1,021,152	764,382	2,531	9,349



PUBLICATIONS RECEIVED

Aeronautical Research Committee Reports and Memoranda: No. 1505. *Statistical Method of Investigating Relations between Elastic Stiffness of Aeroplane Wings and Wing-Aileron Flutter*. By H. Roxbee Cox. Oct. 1932. Price 1s. 6d. net. No. 1507. *Distortions of Stripped Aeroplane Wings under Torsional Loading*. By D. Williams. Aug., 1932. Price 1s. 3d. net. No. 1513. *Heats of Formation of Nitrous Oxide and Carbon Dioxide*. Part I. By J. H. Awbery and E. Griffiths. Part II. By R. W. Fenning and F. T. Cotton. Feb., 1933. Price 2s. 6d. net. No. 1530. *Possible Increase in Level Speed of High Speed Aircraft caused by a Diving Start*. By H. M. Garner and R. K. Cushing. Dec., 1932. Price 4d. net. No. 1531. *Vortex System behind a Sphere moving through Viscous Fluid*. By H. F. Winny. Sept., 1932. Price 1s. net. No. 1533. *Loads in a Fuselage under Combined Bending and Torsion*. By G. W. Mullett. April, 1933. Price 1s. 6d. net. London: H.M. Stationery Office, W.C.2.

Comment Paris sera detruit en 1936. A Translation into French by A. M. Hellot, of Major von Helders' "Luftkrieg 1936." Editions Albert, 4, Square Henri Delormel, Paris (XIV). Price 12 fr.

The Air Pilot (Vol. 1). Monthly Supplement No. 47. August, 1933. London: H.M. Stationery Office, W.C.2. Price 6d. net.

Aeronautical Research Committee Reports and Memoranda: No. 1509. *Stability of Static Equilibrium of Elastic and Aerodynamic Actions on a Wing*. By H. Roxbee Cox and A. G. Pugsley. Oct., 1932. Price 1s. net. No. 1514. *Full Scale Experiments with Servo Rudders*. By J. E. Serby. July 1932. Price 9d. net. No. 1526. *Abstract Calculation of Stresses in Braced Frameworks*. By R. V. Southwell. April, 1933. Price 2d. net. London: H.M. Stationery Office, W.C.2.

The Modern Diesel: A Review of High Speed Compression Ignition Engines, 2nd Edition. London: Iliffe and Sons, Ltd. Price 3s. 6d. net.

Air Annual of the British Empire, 1933-34. Founded and Edited by Sqdn. Ldr. C. G. Burge, O.B.E. Vol. V. London: Sir Isaac Pitman and Sons, Ltd. Price 21s. net.

Multiple-Lens Aerial Cameras in Mapping. Fairchild Aerial Camera Corporation, 62-10, Woodside Avenue, Woodside, L.I., New York. Price \$5.00.



NEW COMPANIES REGISTERED

Change of Name

BEARDMORE (PAISLEY), LTD.—(Manufacturers of motor cars, aero engines, etc., 36, Victoria Street, S.W.1). Name changed to Beardmore Diesels Ltd., on July 20, 1933.



AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motors (The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1932

Published August 17, 1933

- 16,200. FAIREY AVIATION CO., LTD., and A. G. FORSYTH. Means for starting i.c. engines. (395,856)
- 26,859. G. EYSSARTIER. Devices for ensuring protection from the danger of fire from back-firing in aircraft, etc. (395,901)
- 35,444. P. A. GANDILLON. Lighting systems for aircraft, etc. (395,934)

Personals

PREPAID

(13 words or less 3d, then 2d. per word).

To be Married.

NORTHWAY : IRVING.—The engagement is announced between EDWARD GEORGE NORTHWAY, M.B.E., R.A.F., eldest son of Mr. and Mrs. Leon Northway, of Perth, Western Australia (formerly of Bandarawella, Ceylon), and JANET GILMOUR, youngest daughter of E. A. Irving (late Director of Education, Hong-kong) and Mrs. Irving, 1, Fairfield Road, Exmouth.

JONES : GIBBARD.—The engagement is announced between FLYING OFFICER MAURICE LIONEL JONES, R.A.F., and JEAN, younger daughter of Mr. and Mrs. Ernest John Gibbard, of North Field, Chipstead, Surrey.

TOWNSEND : HURST.—A marriage has been arranged and will shortly take place between BASIL WILMOT, only son of Mr. and Mrs. G. C. W. Townsend, of East Croydon, Surrey, and DORIS, only daughter of Mr. and Mrs. F. T. Hurst, of Cowes, Isle of Wight.

Married.

HOMER : RAMSAY.—On August 2, 1938, at St. Peter's Church, Bekesbourne, near Canterbury, FLYING OFFICER JOHN WOOD HOMER, of New Lodge, Amberley, Gloucester, to MISS SUSAN MABEL CHRISTIAN RAMSAY, eldest daughter of Mr. and Mrs. Robert Ramsay, of Howletts, near Canterbury.

MOLESWORTH : HOLMES.—On August 8, 1938, at St. Mary's Church, Wolborough, FLYING OFFICER ANTHONY OLIVER MOLESWORTH, R.A.F., son of the Rev. A. O. Molesworth and the late Mrs. Molesworth, late of Lynton Vicarage, to NOËLLE, youngest daughter of Mr. Justice Holmes (late President and Judge of High Court of Justice, Cyprus), of Holme Lea, Wolborough Hill, Newton Abbot.

Births.

HADLEY.—On August 7, 1938, to NORA (née Chart), wife of FLIGHT-LIEUT. G. A. HADLEY, R.A.F.—a son.

MARGAND.—On August 2, 1938, at Brighton, to EILEEN (née O'Dwyer), wife of FLIGHT-LIEUT. P. M. MARGAND, R.A.F., Heliopolis—a son (PETER MICHAEL SIMS).

SLATTER.—On August 7, 1938, at "Marrick," Anglesey Road, Alverstoke, to CECIL, wife of WING COMDR. L. H. SLATTER—a daughter.

SPOTTISWOODE.—On July 30, 1938, at Cadborough, Rye, Sussex, to CATHARINE MARY, wife of ALEXANDER NINIAN SPOTTISWOODE, R.A.F.—a daughter.

MISCELLANEOUS ADVERTISEMENTS.

Advertisements for this column should arrive at this office by Monday, 12 o'clock noon.

Special PREPAID Rates :—

18 WORDS or less, 3d, then 2d. per word

Display Caps Throughout, 1/6 per line.

Personal Notices, Minimum 3d, then 2d. per word.

Situations Wanted ONLY, 18 words, 1d.

1½d. per word after.

Box No., 1/- per insertion extra.

PATENTS

STANLEY, POPPLEWELL & FRANCIS, Chartered Patent Agents, 88-90, Chancery Lane, London, W.C.2. Telephone: Holborn 6393. Established 1879.

A. P. THURSTON & CO., Chartered Patent Agents, 329, High Holborn, W.C.1. Tel.: Hol. 1117.

F. J. CLEVELAND & CO., Chartered Patent Agents, 29, Southampton Buildings, London, W.C.2. Telephone: Holborn 5875-6.

KING'S PATENT AGENCY, LTD., 146A, Queen Victoria Street, E.C.4.—"Advice Handbook" and consultations free. 47 years' references. Phone: Central 0682.

A. MATHISEN, B.Sc. Aeronautical Invention Advice. First Avenue House, High Holborn, W.C.1.

GEE & CO., 51, Chancery Lane, London, W.C.1. Ask for Book on "Patents, Trade Marks," etc.

AIRCRAFT UPHOLSTERY

L. A. RUMBOLD AND CO., LTD., for Aircraft Furniture in Elektron and M.G.7. Cabins completely upholstered. Special work quoted. Kingsgate Place, N.W.6. Tel.: Maida Vale 3772.

TUITION AT BOGNOR REGIS

1½ miles from Sea. Rates: 50/- Dual, £2 5s. and £2 Solo. Controlled by Rollason Aviation Co., Ltd. Aircraft and Engine Repair. Free Storage for C. of As. Hangar Space for 40 Aircraft. Fully Licensed Club-house.

NO LANDING FEES.

SOUTH DOWNS AERO CLUB
FORD AERODROME

BRITISH SCHOOL OF FLYING

A limited number of Vacancies are available for Special Training Courses

Syllabus. Six weeks ground Instruction on Practical Flying, Theory of Flight and Navigation

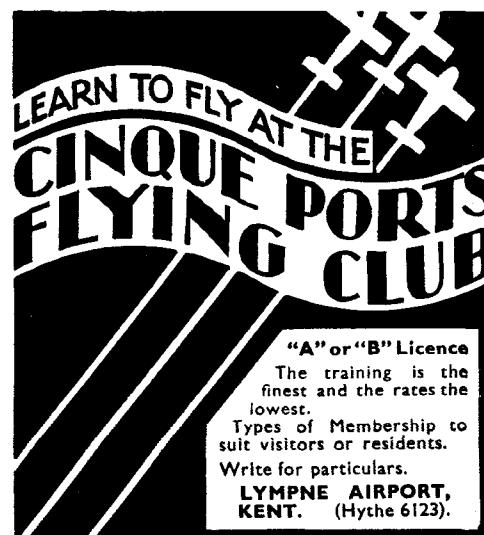
Two actual Flying Instruction Lessons

Honorary Membership of Flying Club

At an Exclusive Charge of £5. 5.0. only

19, Devereux Court, Strand, London, W.C.

Phone: CENTRAL 7760



Comprehensive stocks of AERO ENGINES, SPARES, and AIRCRAFT MATERIAL in FIRST CLASS condition available for immediate supply.

240 h.p. Siddeley "Puma" and Spares.

300 h.p. "Hispano Suiza" and Spares.

130 h.p. "Clerget" and Spares.

360 h.p. R.R. "Eagle VIII" and Spares.

275 h.p. R.R. "Falcon III" and Spares.

Magnets, C.A.V. Starters, Streamline Wires, A.G.S. Parts, etc.

WADDON FACTORY, CROYDON AERODROME, SURREY. Telephone: Fairfield 4333.

Save time by using the Air Mail.

AIR TAXIS

AIR TAXIS, LTD., Stag Lane, Aerodrome Edgware. 'Phone: Edgware 0234/5. z

TUITION

THE INTERNATIONAL CORRESPONDENCE SCHOOLS offer sound instruction in Aeroplane Design, Fitting and Rigging, and Aero-Engine Fitting and Rigging; also expert training for Ground Engineers (Categories A, B, C and D). All instruction is by correspondence. Write to-day for our "Aeronautical Engineering" Booklet.—**INTERNATIONAL CORRESPONDENCE SCHOOLS, LTD.**, Dept. 182, International Buildings, Kingsway, London, W.C.2. 6-26

IMPORTANT.

MANY QUALIFIED "B" Licence Pilots can obtain Positions in the future if they hold the Air Ministry's Wireless Licence. Pilots who intend taking up Flying as a career should first train for the Air Wireless Licence.

The recognised Training Centre, with all the necessary equipment, is **THE LONDON TELEGRAPH TRAINING COLLEGE LIMITED** (Founded 1896), of 20, Penywn Road, Earl's Court, London. Telephone, FLAXman 8721. 10-13

AERIAL PHOTOGRAPHERS

EROFILMS, LTD. Air Surveys—Aerial Photos taken of Factories, Estates, Aircraft in Flight, etc. Library of 35,000 Air Views.—Bush House, Aldwych, W.C.2. Telephones: Temple Bar 2164, 2165; and Showroom at Heston Airport.

AIR SURVEY

AIR SURVEY CO., LTD., Hayes, Middlesex. Telephone: 632 Hayes, Mdx. India Branch, Dum Dum, Calcutta. z

AIRCRAFT CAMERAS

"EAGLE" AIRCRAFT CAMERAS and equipment for survey photography and Naval and Military requirements. Specialists in Air Photographic Apparatus. Hand Held Cameras—Pistol Cameras for air snapshots. Full particulars from Manufacturers and Patentees.—**WILLIAMSON MANUFACTURING CO., LTD.**, Litchfield Gardens, Willesden Green, London, N.W.10. 'Phone: Willesden 0073-4. Contractors to Air Ministry, Admiralty, War Office, Colonial and Foreign Governments. z

MAGNETOS

THE EUSTON IGNITION CO., LTD.

OFFICIALLY approved by the Air Ministry for Aircraft Magneto repairs. B.T.H. Service magnetos and spares in stock for immediate release, London: 329, Euston Road, N.W.1. Tel.: Museum 9921. Telegrams: Eusigco, Euston Road, London. Leeds: 117, Park Lane. Tel.: Leeds 26241. Westcliff: 671, London Road. Tel.: Southend 3491. 7-13

FOR SALE

LONDON & PROVINCIAL AVIATION CO., LTD., 3, Thackeray Street, London, W.8. The aviation Shop (BEHIND BARKERS). For all Aviation requirements.

INSURANCE

COMPREHENSIVE or Public Liability Competitive Premiums, also Personal Accident.—Full particulars by return, from **DEFENCE LIMITED**, Aviation Department, 40, King William Street, London, E.C.4. Tel.: Mansion House 9944. 10-13

SIX EASY MONTHLY PAYMENTS. Immediate cover, any company or Lloyds.—Call, write or phone, F. BERRY, RYDER & CO., 18/20, Regent Street, London, S.W.1. WHI 8845.

GLIDING

IF you are interested in GLIDING obtain the full blue prints of The Dickson Glider, price 30/-, from **FLIGHT OFFICE**, 36, Great Queen Street, Kingsway, London, W.C.2.

CLOTHING

WAINWRIGHT'S FLYING HELMETS

Air Ministry Pattern, Lined Chamois, Sorbo Padded Earphone Pouches, 18/-6. Earphones, 7s. 6d. Triplex Goggles, 4/-6. Special offer: Complete set, comprising Helmet, Earphones and Goggles, as above, 27/-6.

SUMMER EQUIPMENT.

White or Fawn Drill Flying Helmets, Sorbo padded earphone pouches, 7/-6 and 9/-6. White Flying Suits, full length Zip fasteners, 25/-6. Black or Tan Leather Jackets, knitted collar, cuffs and waist, lined silk, full length Zip fastener, 37/-6.

AIR-TIGHT RACING GOGGLES.

Rubber-rimmed eyepieces, curved lenses, adjustable nosepieces, 6/-6; Triplex lenses, 12/-6; Ditto Triplex with large moulded rubber cups, 21/-6. R.A.F. pattern lightweight with rubber-rimmed eyepieces, unsplinterable lenses, 8/-6.

10% Discount to R.A.F. and Club Members.

WAINWRIGHT, 300-302, EUSTON ROAD,
LONDON, N.W.1.

Telephone: Museum 6280.

AERONAUTICAL ENGINEERING

AERONAUTICAL ENGINEERING TRAINING

providing complete practical Works and Aerodrome experience for administrative side of Civil and Commercial Aviation. Students accepted in first instance for probationary term only. Day and Residential

Syllabus from

THE COLLEGE OF AERONAUTICAL ENGINEERING
Chelsea, S.W.3.

SITUATIONS VACANT

ROYAL AIR FORCE.—AIRCRAFT APPRENTICES. Vacancies will become available for boys of good education (who must have attained the age of 15 but not the age of 17 years on January 1, 1934) for training as skilled tradesmen. Good training, pay and prospects. Examination at local centres. Full particulars from ROYAL AIR FORCE (AIRCRAFT APPRENTICES DEPT., F.L.), Gwydyr House, Whitehall, London, S.W.1.

A FEW VACANCIES occur for Premiumed Apprentices to learn aero engineering, with air line operating company.—Write, Box No. 8530, c/o FLIGHT, 36, Great Queen Street, Kingsway, London, W.C.2.

SITUATIONS WANTED

AIRCRAFT CONSTRUCTION, maintenance and/or flying experience wanted in return full time services and premium. Electrical, mechanical knowledge. 4 years' commercial export and customs experience.—Box No. 4140, c/o FLIGHT, 36, Great Queen Street, Kingsway, London, W.C.2.

ROUND ENGINEER requires situation, "A" and "C" all types. 14 years' civil aviation experience at home and abroad. Excellent reference.—Box No. 4144, c/o FLIGHT, 36, Great Queen Street, Kingsway, London, W.C.2.

YOUTH, age 18, desires post in aviation. Keen, willing and energetic. Would be most grateful for a chance to do anything on aerodrome or in factory.—F. H. C., 30, Alexis Street, Bermondsey, London.

'HERMETICOLL'
LIQUID
ENGINE JOINTING
makes perfect joints and saves
money. BRITISH MADE.
Try a 2-l. tin. Post free.

PATENT MOTOR PRODUCTS CO
II. STORE ST., LONDON, W.C.1.

LIBERTY ENGINE DYNAMOS 6v. 15 amps., reduction gear box attachment, Price 5s. carr. fwd. Coley Thermometers, Aircraft Instruments, and AVRO 504K. Spares, etc.

COLEY & ATKINSON, LTD.
ORDNANCE WORKS, KINGSTON - ON - THAMES.

THE POBJOY ENGINE
IS POWERFUL
It develops 80 h.p. at
normal cruising speed.

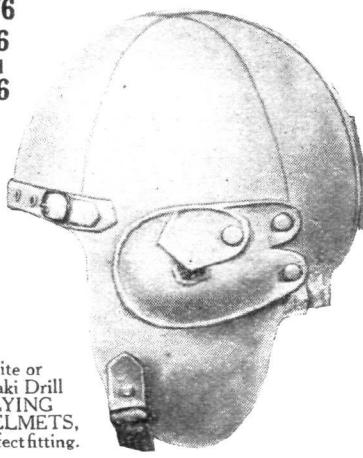


D. LEWIS

LTD.

10 per cent. Discount allowed to
R.A.F. Officers and
Club Members.

10/-
8/-
and
6/-



White or
Khaki Drill
FLYING
HELMETS,
perfect fitting.

FLYING HELMETS, Air Ministry pattern, best chrome leather, black or tan, chamois lined, sorbo padded phone pockets, 15/- & 22/-
EARPHONES, flat type, chromium plated ... 7/-6
GOGGLES, Triplex with sponge rubber pads, 7/-6, 15/- & 25/-
LUXOR GOGGLES, flat Triplex 40/- & 50/-
Ditto, with large curved lenses ... 77/-6
WHITE OR KHAKI FLYING SUITS, Zip fastener ... 25/- & 30/-
Button fronts ... 21/-
LEATHER COATS, R.A.F. pattern, chrome leather, fleece lined ... 135/-
Slightly soiled ... 63/-
COMBINATION FLYING SUITS, fur collar, 60/-; also models with Zip fasteners.
SHEEPSKIN FLYING BOOTS, lambswool lined, with Zip fastener ... 47/-6
Thigh high ... 84/-
SUEDE or LEATHER JACKETS, full length, open-ended Zip ... 37/-6
WRITE FOR FULLY ILLUSTRATED CATALOGUE POST FREE.
(No discount allowed on Luxor Goggles)

ACTUAL MANUFACTURERS. TRADE SUPPLIED—WRITE FOR QUOTATIONS.

D. LEWIS, LTD.

(Dept. F.)

124, GT. PORTLAND ST.
LONDON, W.1.

Tel. Museum 4314. Tel. Aviakit, Wesdo, London.

Sole Agents for Belgium and Northern France;
Societe "Aera," Aerodrome der Deurne-Antwerp.
Sole Agents for Holland and the Dutch Colonies;
E. PELGER, Prinsestratt 33 & 35, Den Haag.

G.R.D.
COMPANY
Flotation Gear,
Balloons,
Pilot Harness,
Pneumatic Dinghys
Parachutes
Rope, Wire, Canvas and
Fabric Work
17, STOKE ROAD,
GUILDFORD, SURREY

FLY A POBJOY POWERED MACHINE

MACHINES & ENGINES FOR SALE

HENLYS

for Aircraft and Cars.
SOLE DISTRIBUTORS FOR

AVRO CADET

and

SPECIAL SALE of used aircraft. All prices reduced.

£195

£220

£315

MARTLET, GENET II.—Single-seater biplane, repainted.

MOTH, CIRRUS III.—Engine, 40 hours since complete overhaul by makers.

MOTH, GIPSY I.—Sports model, cruising speed 100 m.p.h.

Full list of used machines on application.

Heston Airport, Hounslow, Middx.

Phone: Hayes 410.

Woodford Aerodrome, Manchester.
Phone: Bramhall 63.

PHILLIPS & POWIS
SCHOOL OF FLYING

have perfected the art of turning out good pilots in the shortest time and at the lowest cost. Tuition is given only by fully qualified instructors, with years of experience. Moth Aircraft. Up-to-the-minute methods. Residential accommodation. Come and get the "feel" of the machine in a trial lesson costing only 15/-

READING AERODROME. Sonning 114 5.

BLACKBURN
BLUEBIRD. MARK IV.

AUTO-AUCTIONS, LTD., World Distributors, have for disposal second-hand machines, fitted with Gipsy and Hermes engines. Prices from £250. Particulars of new machines on request. Side-by-side seating, all-metal construction. Horseferry Road, Westminster, S.W.1. Phone: Victoria 8761.

NEW UNUSED BRISTOL FIGHTER; also Fairey Fox, with or without C. of A. Several Lynx Mark IV engines.—Box No. 4141, c/o FLIGHT, 36, Great Queen Street, Kingsway, London, W.C.2.

BRISTOL FIGHTER, full equipment, only flown about 20 hours. C. of A. until December. Now equipped with new Rolls-Royce "Falcon" engine. Offers invited.—Box No. 8528, c/o FLIGHT, 36, Great Queen Street, Kingsway, London, W.C.2.

SPECIAL PUSS MOTH, fitted long range tanks, 160 gallons capacity, Gipsy Major Engine, 70 hours. Metal propeller; Reid-Sigrist pitch and turn indicators; many extras. Suitable for record attempt. Further particulars and price on application.—Box No. 8529, c/o FLIGHT, 36, Great Queen Street, Kingsway, London, W.C.2.

AIRCRAFT WANTED

WANTED, Gipsy I Wooden Moth, for cash.—PHILLIPS & POWIS AIRCRAFT LTD., Reading Aerodrome, Woodley.

Write for illustrated folder.

POBJOY AIR MOTORS
LTD., Hooton, Cheshire

Kindly mention "Flight" when corresponding with advertisers.

AIR SERVICE TRAINING LTD.

For short and long courses on civilian and service aircraft, and for all
Air Ministry Licences.

BRITAIN'S AIR UNIVERSITY, HAMBLE, SOUTHAMPTON

AST64A

SCHOOLS

THE DE HAVILLAND SCHOOL OF FLYING
HATFIELD AERODROME, HERTS,
OFFERS EXPERT TUITION, every comfort,
licensed restaurant, pleasant surroundings, a fine
aerodrome, and individual attention. Trial lesson
by appointment. Telephone, Hatfield 250.

FLYING INSTRUCTION.—Trial Lesson, 10s. 6d.
Dual, 37s. 6d. per hour. Solo, 27s. 6d. per
hour.—**THE HAMPSHIRE AEROPLANE CLUB**, Southam-
pton. 'Phone: Eastleigh 170.

CAMBRIDGE.

Tuition, 30s. per hour. Air Taxis, from 6d. per mile.
Special Flying Rates for members of H.M. Services
and Air Force Reserve.

Dual or Solo, 25s. per hour (no other fees).

**MARSHALL'S FLYING SCHOOL, LTD.,
CAMBRIDGE.**

'Phone: Aerodrome 1631; Offices 215.
Aerodrome 1 mile from centre of Town.

EAST ANGLIAN AERO CLUB

C.F.S. INSTRUCTORS

Advanced Dual Aerobatics

FULLY LICENSED CLUB.

LONDON'S NEAREST AERODROME.

ABRIDGE (Nr. LOUGHTON), ESSEX

'Phone: Theydon Bois 224.

BROOKLANDS

Send for booklet "B," an attractive
illustrated brochure containing full
details of activities and methods of
instruction at Brooklands.

**BROOKLANDS FLYING CLUB,
BYFLEET, SURREY.**

MODELS AND PARTS

A. E. JONES, LTD.

The Original House for Model Aeroplanes and
Accessories. Quality always of the highest standard.
Price list free.—97, New Oxford Street, London,
W.C.1. Tel.: Temple Bar 6350.

MODEL AIRCRAFT KITS

The Model Aircraft Stores,

133, Richmond Park Rd., Bournemouth,
PROPELLERS, ETC.

WRITE FOR LISTS.

DICKSON GLIDER

Complete Sets of Working Drawings
(Blue Prints) in great detail. The
machine has been considerably
redesigned. Strength and durability
improved without increase in weight.

CHEAPER AND EASIER
TO CONSTRUCT.

Price 30/-

"FLIGHT" Office,
36, Great Queen Street, Kingsway, W.C.2.

AVIATION BOOKS

" <i>Flying</i> ," By Lt.-COL. W. LOCKWOOD MARSH, M.A.	1/2 <i>Post Free</i>	8/- <i>Post Free</i>
" <i>Model Aeroplanes and Airships</i> ," By F. J. CAMM	1/2 <i>Post Free</i>	9/- <i>Post Free</i>
" <i>The Model Aeroplane Manual</i> "	1/9 <i>Post Free</i>	9/- <i>Post Free</i>
" <i>The ABC of Flying</i> ," By Lt.-COL. W. LOCKWOOD MARSH, M.A.	2/9 <i>Post Free</i>	10/- <i>Post Free</i>
" <i>Raftales</i> " (Illustrated by Ping).	2/3 <i>Post Free</i>	10/6 <i>Post Free</i>
" <i>Airsense</i> ," By W. O. MANNING, F.R.Ae.S.	3/9 <i>Post Free</i>	11/- <i>Post Free</i>
" <i>British Aircraft Illustrated</i> ," By C. A. SIMS	3/9 <i>Post Free</i>	11/- <i>Post Free</i>
" <i>British Aviation Illustrated</i> ," (70 illustrations) By C. A. SIMS	3/9 <i>Post Free</i>	13/- <i>Post Free</i>
" <i>Aerobatics</i> ," By MAJOR OLIVER STEWART, M.C.	5/4 <i>Post Free</i>	15/6 <i>Post Free</i>
" <i>The Art of Flying</i> ," By CAPTAIN NORMAN MACMILLAN	5/6 <i>Post Free</i>	15/9 <i>Post Free</i>
" <i>Fly with Me</i> ," By CAPTAIN H. DUNCAN DAVIS, A.F.C., AND C. SPRIGGS	5/6 <i>Post Free</i>	15/9 <i>Post Free</i>
" <i>Britain's Air Peril</i> ," By MAJOR C. C. TURNER, A.F.R.A.E.S.	5/6 <i>Post Free</i>	20/9 <i>Post Free</i>
" <i>Scale Model Aircraft</i> ," By JAMES H. STEVENS	5/6 <i>Post Free</i>	20/9 <i>Post Free</i>
" <i>Gliding and Sail Planing</i> ," By STAMER & LIPPISCH	5/6 <i>Post Free</i>	20/9 <i>Post Free</i>
" <i>Simplified Aerial Navigation</i> ," By J. A. McMULLEN, M.B.E.	5/6 <i>Post Free</i>	20/9 <i>Post Free</i>
" <i>The Autogiro and How to Fly It</i> ," By REGINALD BRIE	5/6 <i>Post Free</i>	20/9 <i>Post Free</i>
" <i>Book of the Autogiro</i> ," By C. J. SANDERS and A. RAWSON	5/6 <i>Post Free</i>	21/9 <i>Post Free</i>
" <i>The Pictorial Flying Course</i> ," By FL-LT. SCHOFIELD & F.O. JOHNS (Upwards 250 illustrations)	5/6 <i>Post Free</i>	21/9 <i>Post Free</i>
" <i>Motorless Flight</i> ," By J. R. ASHWELL COOKE	8/- <i>Post Free</i>	21/9 <i>Post Free</i>
" <i>Learning to Fly</i> ," FRANK A. SWOFFER, M.B.E. A course of elementary flying instruction.	8/- <i>Post Free</i>	21/9 <i>Post Free</i>
" <i>Air Navigation for the Private Owner</i> ," By FRANK A. SWOFFER	8/- <i>Post Free</i>	21/9 <i>Post Free</i>
" <i>Air and Aviation Law</i> " (Civil Aviation) By WM. MARSHALL FREEMAN	8/- <i>Post Free</i>	21/9 <i>Post Free</i>
" <i>Airmanship</i> ," By JOHN McDONOUGH	8/- <i>Post Free</i>	25/9 <i>Post Free</i>
" <i>Around the World in Eight Days</i> ," By POST and GATTY	8/- <i>Post Free</i>	56/3 <i>Post Free</i>
" <i>The Aeronautical Ground Engineer's "A" and "B" Licences</i> ," By CAPT. S. L. COLLINS	8/- <i>Post Free</i>	Just Out
" <i>War in the Air, 1936</i> ," By MAJOR HELDERS	8/- <i>Post Free</i>	The above obtainable upon application to : "FLIGHT" Office, 36, Great Queen Street, Kingsway, W.C.
" <i>Camels are Coming</i> ," By W. E. JOHNS	8/- <i>Post Free</i>	8/- <i>Post Free</i>

Save time by using the Air Mail.



The biggest flying boat ever built in Great Britain.

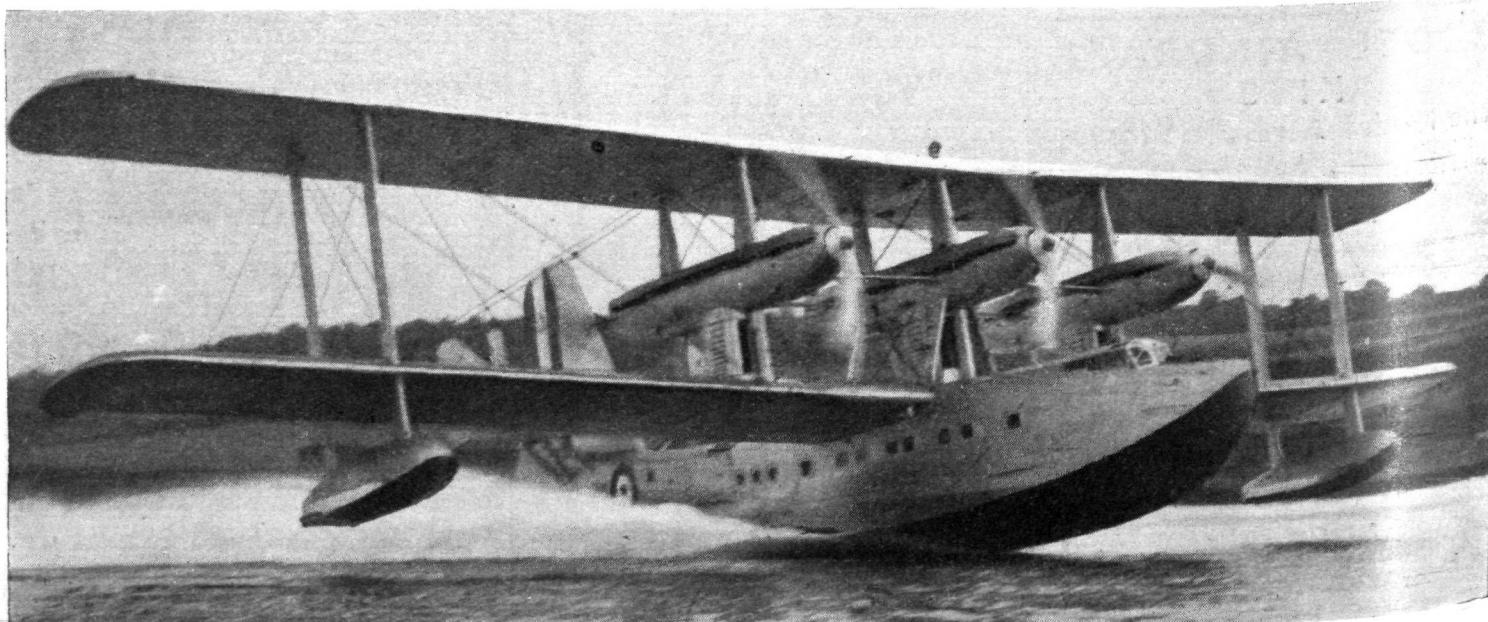
Telephone: Chatham 2261

SHORT BROS (Rochester & Bedford) LTD ROCHESTER

LONDON OFFICE • 41, WHITEHALL, LONDON, S.W.1.

Telephone: Whitehall 8378

6 Rolls-Royce "Buzzard" Engines



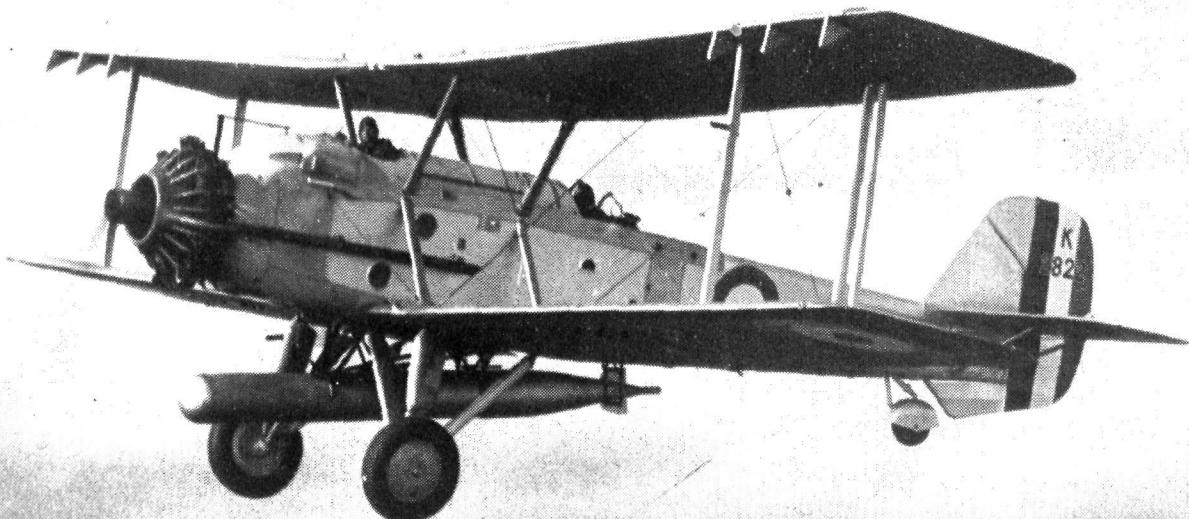
Kindly mention "Flight" when corresponding with advertisers.

VICKERS "VILDEBEEST"
PEGASUS ENGINE

AUGUST 17, 1938

ADVERTISEMENTS.

FLIGHT



VICKERS [AVIATION] LIMITED, WEYBRIDGE, ENGLAND.

"Bristol"

AIR-COOLED ENGINES
IN COMMERCIAL SERVICE



The Airport of Alexandria.

IMPERIAL AIRWAYS AIRCRAFT POWERED WITH "BRISTOL" ENGINES.

In the above picture three of the Scipio class (four "Bristol" engines) and one of the Calcutta class (three "Bristol" engines) flying boats are seen at anchor.

THE BRISTOL AEROPLANE CO. LTD., — FILTON, BRISTOL

Printed for the Proprietors and Publishers, THE ST. MARTIN'S PUBLISHING CO., LTD., 36, Great Queen Street, Kingsway, W.C.2, by HARRISON & SONS, LTD., 44-47, St. Martin's Lane, London, W.C.2. Agents for the Colonies: GORDON & GOTCH, LTD., London, Melbourne, Sydney, Brisbane, Perth, Launceston (Tas.), Wellington (N.Z.), Dunedin (N.Z.). Canada—45, Richmond Street East, Toronto. South Africa—CENTRAL NEWS AGENCY, LTD. Entered at the New York Post Office as second-class matter.